

AMERICAN ARTISAN

JUNE 1960

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.. The Magazine of

CENTRAL RESIDENTIAL AIR CONDITIONING

WARM AIR HEATING • SHEET METAL CONTRACTING

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"... so I told my supplier: 'Look, the more you take out of your furnace in other ways the more it needs a Field Draft Control! Why save pennies in cost and risk losing dollars in service?'"



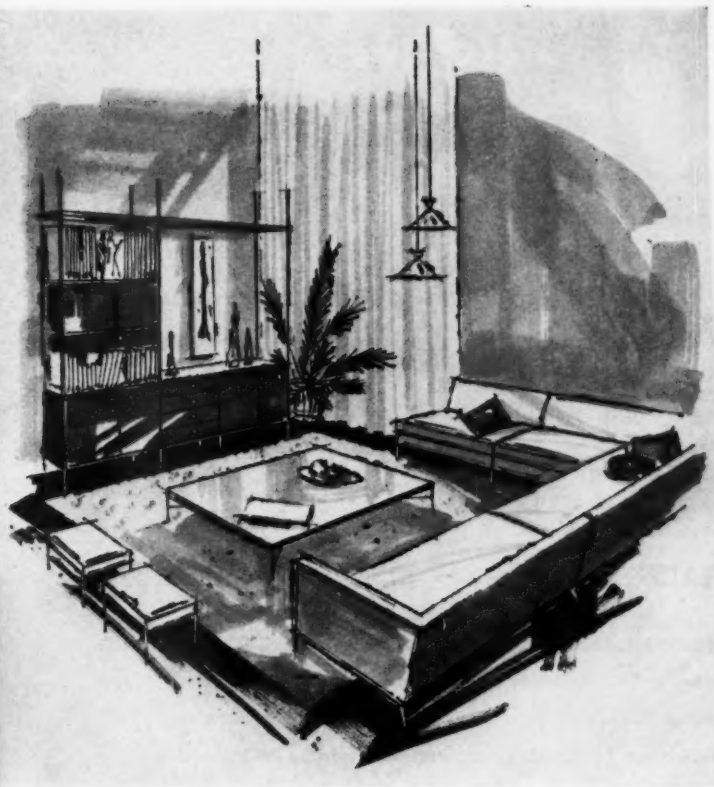
"You know, boy, true quality helps everyone . . . the manufacturer, the consumer, and us. Why does our industry keep pricing itself poor?"



FIELD CONTROL DIVISION — Conco Engineering Works, Inc., Mendota, Illinois

AFFILIATES:

**SPARTAN TOOL DIVISION — Powered Sewer Cleaning Equipment — MATERIAL HANDLING DIVISION — Cranes, Hoists
CONCO BUILDING PRODUCTS, INC. — Brick, Tile, Stone**



Put your best filter forward and watch your business grow!

Things start happening—*fast*—when you install your first PLIOTRON super-filter.

For it doesn't take a user long at all to discover that he's getting far cleaner air than ever before. After all, he's using a filter that *traps up to 5 times as much fine dirt* as an ordinary filter.

It's not long, either, before he's telling friends about his great new filter "discovery"—and the installer who made it possible.

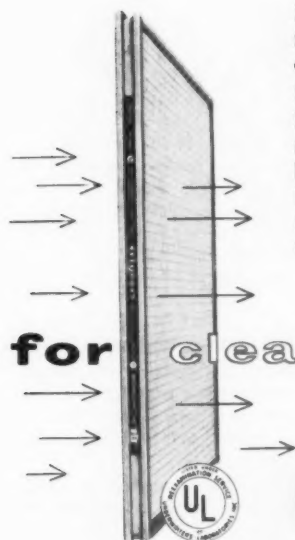
But it doesn't end there. In a matter of months, your customer's also finding out how much easier PLIOTRON filters are to keep in working order. Instead of a messy reoiling job, a simple vacuum cleaning or water-rinse restores full filter power.

In time, he also sees for himself that PLIOTRON filters aren't just called "permanent"—they *are* permanent. Properly maintained, they'll serve for the life of the heating or air conditioning unit.

That means a PLIOTRON installation keeps advertising you and your business for years. Word gets around that you're the man to see for top-drawer products and services. And that's a reputation which pays off over and over again.

Remember, too, you can now install the advanced PLIOTRON CR Filter at ordinary filter prices—or, for critical installations calling for maximum filter-power, you can specify the improved PLIOTRON HD. For complete details, write:

Goodyear, P.O. Box 52, Akron, Ohio



for cleaner air everywhere—

NEW PLIOTRON AIR FILTERS BY

GOOD YEAR

THE GREATEST NAME IN RUBBER

Pliotron—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

AMERICAN ARTISAN

... The Magazine of

CENTRAL RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING • SHEET METAL CONTRACTING

JUNE 1960

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Merged with American Artisan are "Warm Air Heating" and "Furnaces and Sheet Metals"



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one unit...  ...heats and cools



Get in on MUELLER CLIMATROL HEAT PUMP PROFITS

Pump more profits into your business with remarkable Mueller Climatrol Heat Pumps. They heat, cool, and clean the air all year long. And Mueller Climatrol offers a quality unit for every requirement:

Model 315 Self-Contained Heat Pump can be installed inside or outside, in 3 or 4 HP sizes. Four HP size features a twin refrigeration system for 2-stage air conditioning — improving humidity control and efficiency.

Mueller Climatrol *remote* heat pump systems are available in 3 and 5 HP models — featuring *Model 318 Outdoor Compressor* assembly and *Model 317 Indoor Blower Coil*, which can be suspended anywhere.

A supplementary heat package, *Model 316*, is also available in 8 kw (27,260 BTU) and 12 kw (40,920 BTU) sizes. See your Mueller Climatrol representative or write direct for details on these popular units.

THE Complete Line for Indoor Climate Control



2025 W. OKLAHOMA AVE., MILWAUKEE 1, WIS. • 1024 WESTMINSTER AVE., ALHAMBRA, CALIF.

the editor's notebook

Thumbing Through This Month's Artisan

... we find a dealer-contractor who uses the Standards for Rating Residential Cooling Systems Card in his sales presentation because he feels the *Standards* card enables him to use the "Good" classification to sell a better job with the result that he is able to earn a better profit. Because the selling job is a thorough procedure with this firm, it believes the *Cooling Standards Card Proves an "Ideal Sales Tool" to Fulfill Prospect Needs*. Another reason why this dealer-contractor feels the *Standards* card is an "excellent sales tool" is because it provides him with the opportunity to give unbiased guidance to the prospect. This is achieved by the list of points on the *Standards* card that enable the prospect to understand the basic functions of a central air conditioning system, and in turn, can use this basic understanding to ask questions that are essential in making a wise decision when placing the order. Another instance where you can use the *Standards* card to sell summer comfort to a homeowner is when you explain the complex subject of air distribution. In *Air Distribution Studies Show What Factors Affect Room Temperature Gradient*, you get factual information on temperature gradient that is based on observations from field tests in actual homes. Conclusions drawn from these tests, from the standpoint of temperature gradient, rate ceiling outlets, floor registers, and floor diffusers in terms of comfort condition offered with respect not only to creating a minimum of temperature gradient in the 4 to 60 in. zone, but also with re-

get all the advantages of
outside lighting
for your gas appliances
use ...

**MODERN
LIGHTER
TUBES**

for
safety
simplicity
convenience
dependability

• Engineered and fabricated to fit any gas fired unit and become a component of your equipment at a surprisingly low cost. Modern Lighter Tubes are widely accepted by manufacturers and utilities.

ATTENTION ENGINEERS—

NOW ... Modern Lighters, Inc. has developed a new "carry-over" tube for sectional burners ... approved and accepted by leading manufacturers. Send for complete information and samples.

(U. S. Pat. No. 2728384, Can. Pat. No. 566970)

WRITE FOR
COMPLETE
LITERATURE



**MODERN LIGHTERS
INCORPORATED**
Northville, Michigan

the editor's notebook

(Continued)

spect to room-air velocity uniformity or room-air temperature and room-to-room balance.

Fabricating

... sheet plastic material for duct systems has developed into a full time specialty item for a firm in Kansas City when it found it could adopt the skills and experience of sheet metal journeyman to the tools used for plastic work. *How to Fabricate Plastic Duct Systems* shows how this firm was able to reduce its fabricating and installation costs to about one-half of the cost that would have occurred if the manufacturers fabricating techniques were followed. Duct systems made with sheet plastic material appeal to industries that have corrosive atmospheres because the material extends the life of ventilating system components.

Design

... an industrial heating job so that direct-fired unit heaters discharge and circulate warmed air parallel to the exposed areas in order to diffuse the cold air at one of its major sources. This is another responsibility of the dealer-contractor if he intends to achieve customer satisfaction by providing maximum comfort. *Design Direct-Fired Heater System So It Opposes Sources of Cold Air* suggests how to select and locate units for best heat distribution.

Clarifies Inquiries, Answers Come In Fast

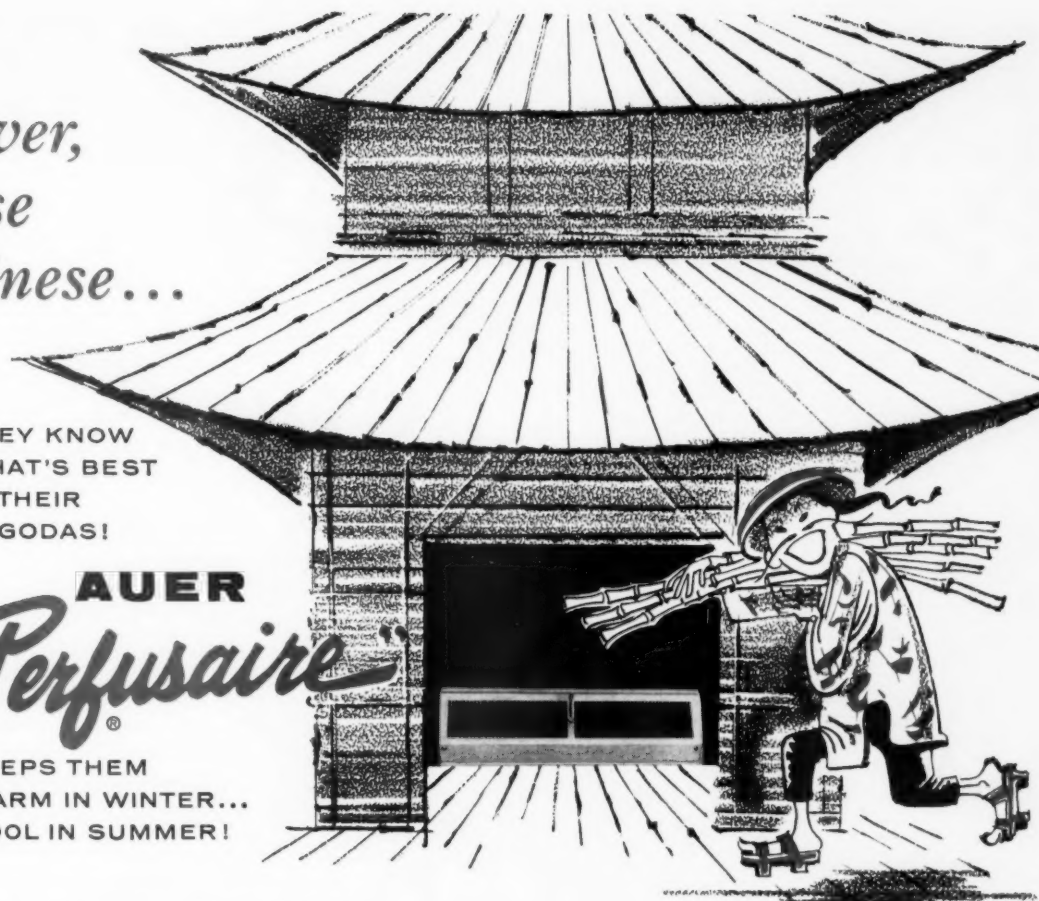
I was impressed with a memorandum recently received from Clyde Cleveland, Bradford, Pa. Mr. Cleveland has

*Clever,
these
Chinese...*

THEY KNOW
WHAT'S BEST
IN THEIR
PAGODAS!

AUER
"Perfusaire"

KEEPS THEM
WARM IN WINTER...
COOL IN SUMMER!



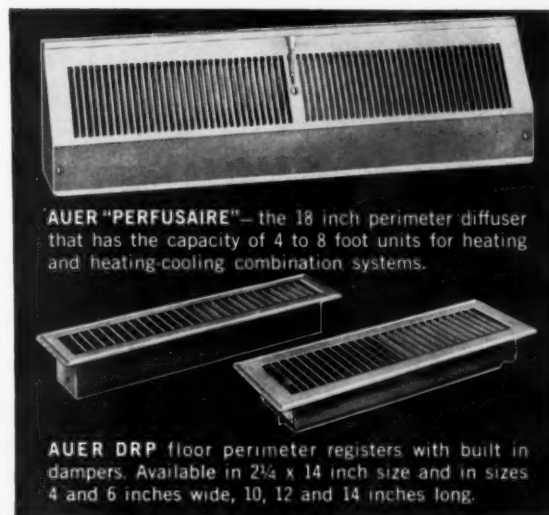
Like the Clever Chinese...

Sheet metal contractors everywhere are discovering amazing savings in time, labor and costs by using Auer "Perfusaire" perimeter registers. They have found that installation time is cut in half!

Perfusaire, designed for use in or against plastered walls, inside or outside the base-board, installs quickly... easily... without cutting or fitting. It hugs the wall without unsightly gaps... eliminates use of fillers or moldings. It is the answer to difficult uneven wall installations!

The Auer Perfusaire is equipped with a built-in damper to provide positive, controlled system balancing, making it ideal for heating and combination heating-cooling perimeter systems.

For complete details on how you can minimize installation time and increase profits with Perfusaire, ask for Bulletin P-54.



AUER "PERFUSAIRE"—the 18 inch perimeter diffuser that has the capacity of 4 to 8 foot units for heating and heating-cooling combination systems.

AUER DRP floor perimeter registers with built in dampers. Available in 2¼ x 14 inch size and in sizes 4 and 6 inches wide, 10, 12 and 14 inches long.



THE AUER REGISTER COMPANY

"REGISTERS AND GRILLES FOR EVERY HEATING AND COOLING NEED"

6602 CLEMENT AVENUE • CLEVELAND 5, OHIO

the editor's notebook

(Continued)

designed a 5½ x 8 in. printed inquiry form that quickly and clearly states just what the memo is about. It contains all of the essential information that would be included in a letter, yet it is easier to read and can be prepared for mailing in less time.

At the top of the form are the company's name and address and a dateline. Beneath this, following the word *Concerning*, is space for the subject of the memo. The balance of the form is taken up by the following list:

- () Catalog for our files.
- () Is it now on the market?
- () Have you a dealer in Bradford?
- () Name of nearest jobber.
- () How about delivery?
- () Prices.
- () Keep us on your mailing list.
- () Have your representative call.
- () Any time.
- () Rush

Mr. Cleveland just checks the appropriate line, signs his name and drops the memo in an envelope for mailing. I understand it gets quick results because it's easy to read and clear in meaning.

'Wish I'd Subscribed Sooner'—New Reader

LETTERS such as this one from John M. Palmer, Palmer Furnace Co., Eastlake, Ohio, tell us in a few words that we are hitting the nail on the head with our balanced editorial program:

"Dear Sir — Your magazine contains a lot of very useful and interesting information. I should have subscribed to it long before this."

If you don't agree, write



A USEFUL SALES TOOL



To use in selling **AIR-EASE** Heating and Air Conditioning Units.

This File Folder includes Brochures in color, with dimensions and specifications of all models of gas and oil fired heating units, including the NEW BTS-200 (200,000 BTU input) gas fired and BTL-200 (224,000 BTU input) oil fired units.

Heating from 60,000 to 200,000 BTU. Cooling from 2 to 5 tons.

WRITE for this new sales tool and the name of your nearest distributor.



AIR-EASE

THE JOHNSON FURNACE COMPANY
2129 WEST 117th STREET, CLEVELAND 11, OHIO

the editor's notebook

(Continued)

and let us know. We'd appreciate knowing your opinion, too.

More than 4,000,000 Firms Now Operating

HOW MANY business firms in the U.S.? The total number is 4,362,700. This figure has been broken down according to the number of workers employed as follows:

1 to 20	4,131,400
20 to 99	189,650
100 to 999	38,100
1000 or more	3,550

Management Personnel Get Overtime Pay

FIFTY-TWO percent of 434 companies surveyed by the American Management Association pay overtime for management men — either extra pay is giving or they give time off to stay-lates who are legally exempt from compulsory overtime pay.

Financial Ratios Show Business Health

WE'VE all heard about successful businessmen who drive themselves too hard and endanger their health. Well, many a profitable business endangers its financial health by neglecting to study its balance sheet carefully. Sometimes unsound decisions result in investing too high a proportion of capital in equipment, or in sales expansion before the money is available to finance so large a volume. Then again, there are businessmen who take long chances in buying merchandise, and are later caught short with top heavy inventories. Or else, too much dependence is placed on borrowed money; or too much of the earnings are drawn out of the business, at the risk of future expansion; or else

CLEATS...

"S" OR DRIVE

8 to 10 Times

FASTER

THAN MANUAL FORMING

HERE'S PROOF

taken from actual
shop production
records:

	AVERAGE BAR FOLDER PRODUCTION	AVERAGE CLEATFORMER PRODUCTION
"S" CLEATS 12" LONG	125	1200
DRIVE CLEATS 12" LONG	250	2100

Extra Advantages:

- 1 "S" cleats made on the Cleatformer have a hem on both edges for added strength, for handling ease and safety, greater stiffness.
- 2 Cleats of any length can be rolled on the Cleatformer . . . no limit.



CLEATFORMER

THE ONE MACHINE THAT
PRODUCES ALL FIVE OF
THESE SHAPES...

Makes both "S" and drive cleats with no changeover. But, it's more than just an "S" and drive machine" . . . the Cleatformer will produce 3 additional shapes—right angle flange, standing seam and T-connection—with a single set of auxiliary rolls by merely shifting a guide position. The Cleatformer is versatile, it's fast . . . it's a money-maker.



With the Cleatformer, you turn out more work faster . . . using fewer men . . . cut cleat fabrication costs to the bone. Best of all, it'll turn out *extra* profits for you, day after day, year after year. More information? Ask us.

LOCKFORMER®

TIME SAVING, MONEY MAKING EQUIPMENT

manufactured by

THE LOCKFORMER COMPANY

Dept. A, 4615 West Roosevelt Road, Chicago 50, Illinois

In Canada: Brown Boggs Foundry & Machine Co., Ltd., Hamilton, Ontario

the editor's notebook

(Continued)

nothing is done about checking mounting debt, or slow collection of outstanding receivables.

Financial ratios are your business health ratios. Since 1932, Dun & Bradstreet has issued annual data covering 14 important financial ratios. If you would like a copy of the booklet "Fourteen Important Ratios," write to Dun & Bradstreet's Public Relations Div., Dept. 12, 99 Church St., New York 8.

How Many Will Collect Pensions Being Built?

WHAT are the average worker's chances of being alive at 65 to collect the pension he is building up? According to the Metropolitan Life Insurance Co., 70 of every 100 workers in their late 30's or early 40's will be alive. At age 65, the average left is 13 percent for men, 15½ for women.

Public Getting, Spending More Money

HAVE YOU ever thought of what people do with their personal income and how this changes from year to year? Recently the United States Savings and Loan League sent me a table, based on findings of the U.S. Department of Commerce, that breaks down personal income into taxes, disposable income, expenditures and savings. Note how these figures have gone up since 1940:

1940

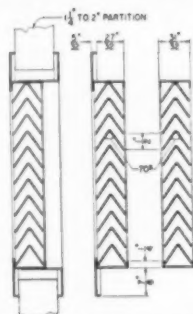
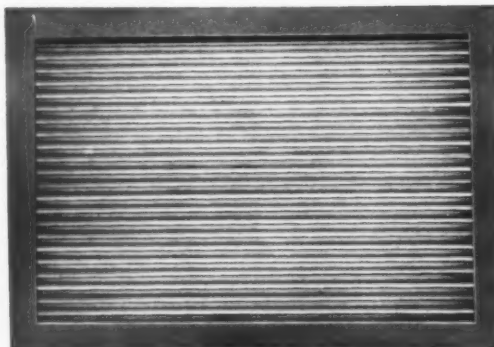
Personal Income, \$78.7 billion

Personal Taxes, \$2.6 billion
Disposable Personal Income, \$76.1 billion

Consumption Expenditures, \$71.9 billion

Personal Savings, \$4.2 billion
Percentage of Savings, 5.5%
1950 figures show:

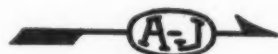
New Ruggedness! A-J Heavy-Duty ALL-STEEL, NO-VISION No. 78 GRILLE



MODEL 78-B WITH 1 1/2" TO 2" PARTITION
MODEL 78-B WITH 1" PARTITION
MODEL 78-A WITH 1/2" PARTITION

You'll find this new, sturdy, extra-rigid no-vision grille ideal for door or partition installations, and for either return air or exhaust application. It has approximately 50% free area and is completely sight proof. Available in channel frame or flange frame styles, or as a core only. 18-gauge steel inverted "V" louvers are on 1/2" centers. You'll be delighted with the appearance and performance of this new, extra-sturdy A-J Grille!

Write for FREE catalog.



A-J MANUFACTURING CO.

3601 E. 18th St.

Dept. A6

Kansas City 27, Mo.

the editor's notebook

(Continued)

Personal Income, \$227.0 billion

Personal Taxes, \$20.9 billion

Disposable Personal Income, \$206.1 billion

Consumption Expenditures, \$194.0 billion

Personal Savings, \$12.1 billion

Percentage of Savings, 5.9%
1958 (4th Quarter)

Personal Income, \$359.5 billion

Personal Taxes, \$43.7 billion
Disposable Personal Income, \$315.8 billion

Consumption Expenditures, \$295.9 billion

Personal Savings, \$19.9 billion

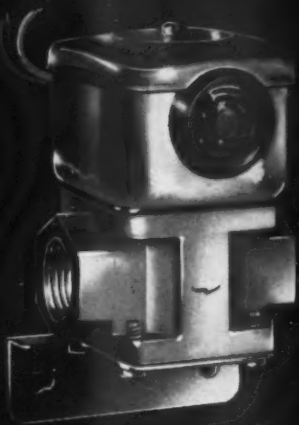
Percentage of Savings, 6.3%

These figures show that the U.S. economy is on solid ground, and that people in general are conscientiously working toward obtaining better standards of living while managing to put aside a little for a rainy day. Often prospects, when carefully and closely questioned, will reveal that they do have savings that might be utilized to advantage by improving their heating systems.

Says Long-Range Plans Are 'Profit Insurance'

I RECENTLY RECEIVED a booklet entitled "How to Plan for Profit." Some of the statements in this book will certainly hit home to those who are having difficulty making a fair profit for their efforts. One paragraph states: "Long range planning is one of the most creative aspects of management, and it is easy to see why it gives management such a tremendous advantage in competition. Many executives are referring to long range planning as their 'profit insurance.'"

The 12 page booklet goes on to state that business executives should ask them-



ALL THE WAY
DOWN THE LINE...

SINGLE VALVE TO
COMPLETE MANIFOLD
ASSEMBLY...

McQUAY-NORRIS CONTROLS
ARE DESIGNED TO FIT
YOUR PARTICULAR
APPLICATION.



McQUAY- NORRIS

MANUFACTURING CO.

ELECTRIC PRODUCTS DIVISION, ST. LOUIS 10, MO.
60 years in the manufacture of precision products

the editor's notebook

(Continued)

selves these questions:

- 1) Is the firm's policy correct?
- 2) Is the firm's service all that can be desired?
- 3) Is the firm's pricing procedure right?
- 4) Are all opportunities for the sale of optional equipment pursued diligently?
- 5) Is sales promotion carried out to the best possible advantage?

Copies of this booklet can be obtained from Caruso, Malis & Worn, Inc., 300 W. Washington St., Chicago 6.

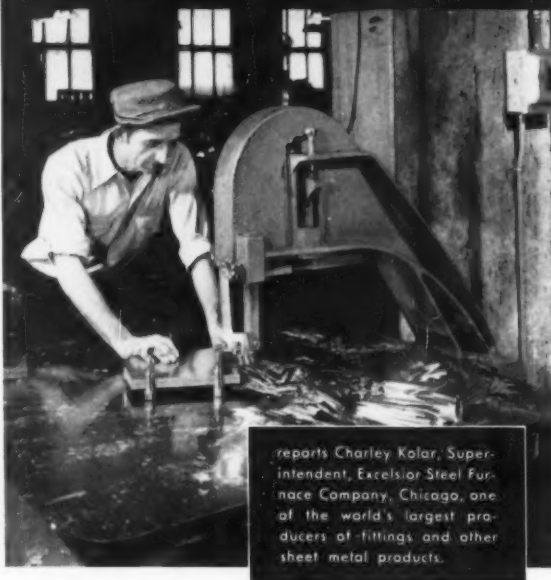
Managers Slow to Admit Blame for Failure

LAST MONTH we presented the thought expressed by Dr. Jerome C. Beam in the Small Business Administration's Small Marketers Aids No. 46 that money isn't everything that makes a small business a success. This month the need for self-improvement is covered. One reason why a program of self-improvement and development is needed can be found in a study of causes of business failures made by Dun and Bradstreet. It shows that 89.4 percent of such failures were the result of shortcomings on the part of managers.

What do small business executives themselves think about this problem? Dr. Beam points out that in a survey of small businessmen whose companies were in trouble, only one in 12 admitted that his own shortcomings might have been an important factor in his firm's downward path. The rest obviously refused to admit this possibility — and refused to look at themselves objectively.

"This is not unusual," Dr. Beam says, "because few

"Stack Cutting Beats Die Cutting on most of our jobs"



reports Charley Kalar, Superintendent, Excelsior Steel Furnace Company, Chicago, one of the world's largest producers of fittings and other sheet metal products.

"We cut production costs on every job cut on the Lockformer Band Saw"

"... because we turn out more work on it... cut total time on the job by eliminating set-up time... and save expensive die costs," adds Clarence Holub, Assistant Superintendent. "Furthermore, with fewer dies, we cut the risk of having minor design changes to fittings turn good dies obsolete overnight—or even before the first run, as sometimes happens."

"This Lockformer Band Saw is one of the most profitable machines in our shop. Our operators can breeze through even the most complicated patterns, stacked—say —1" high, faster and easier than they could with any other saw we've tried. Work is easier to handle on the Lockformer Saw... easier to back out. And, because of Lockformer's wheel support and carbide blade guides, it's more accurate... doesn't lead off like other saws costing 3 times as much... and our cuts are as good as on any blanked piece."

How about your shop? Could it use a money-saver like the Lockformer Band Saw?... 3-wheel Model 24S with full 24" throat for big jobs or 2-wheel Model 14SM with 13½" throat for smaller work.

Plenty of other money-saving features described in the Band Saw Bulletin... write:



THE LOCKFORMER CO.
Dept. A, 4615 West Roosevelt Road
Chicago 50, Illinois

In Canada: Brown Boggs Foundry & Machine Co., Ltd., Hamilton, Ontario

the editor's notebook

(Continued)

people do look at themselves objectively. But little progress in the direction of self-improvement can be made until a man takes a long, hard, realistic look at himself. Then, and only then, is he in a position to conquer his shortcomings.

"Oceans of ink have been used up to describe the qualities of the 'ideal' manager. If you have been reading some of the descriptions you may be pardoned for being confused. You may, for instance, assume that the qualities which appear in this list or that are the final word. You may further assume that the ideal manager exists in real life, and that (to go one step further) the qualities which make a man successful in one organization will also make him successful in another, regardless of the size and nature of the enterprise. Nothing could be further from the truth.

"Perhaps you yourself, early in your business life, have had the experience of working in one organization where you felt out of place, only to get a comparable position in another company where you worked with great success. This is hardly strange. After all, not only each man, but also each organization, has a distinct and possibly unique personality. The right man in the right organization has every chance to succeed; yet the right man in the wrong (wrong for him, that is) company may fail utterly."

If this has been true in your business life, you'll want to learn what can be done about it. This subject will be covered next month.

Clyde M. Barner

EDITOR

Make the "Stopwatch test"



WILLIAMSON Seal-Tite* duct, pipe & fittings
guarantee a faster, better installation!

HERE'S PROOF!...

JOB: One man to install all duct and fittings, plenum to register, with 8 average warm air runs and 1 central return air.

INSTALLATION METHOD

LABOR TIME

Average Prefabricated
or Shopmade Duct & Fittings.....16 hrs. 8 min.
Seal-Tite* Duct & Fittings.....14 hrs. 1 min.

YOU SAVE... 2 hrs. 7 min.

2 Hrs., 7 Min. X Your Hourly Rate = \$ _____ SAVED!

*T/M

Figure out for yourself just how much you can save. Even better, try Seal-Tite on one of your jobs and make your own "stopwatch test". AND... Seal-Tite duct and fittings fit perfectly... have custom-made appearance... maximum efficiency.

THE WILLIAMSON COMPANY
3310-U-6 Madison Road, Cincinnati 9, Ohio

Tell me more about Williamson Seal-Tite*!

NAME _____

FIRM _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

● Take premium ingredients . . . 65 years of manufacturing experience . . . astute design and heavy construction . . . extra-efficient manufacturing.

Apply to a complete line of volume-produced furnaces and air conditioners.

You get premium qualities, with reduced manufacturing costs.

You get Moncrief, the heavily constructed furnaces and air conditioners that are competitive in price, all along the complete line . . . every unit in every size.

HERE'S WHAT Consistently Competitive MEANS TO YOU

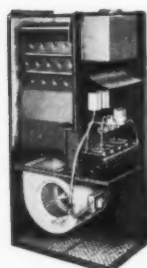
With Moncrief, you make those important extra dollars from replacement or custom-installed jobs.

With Moncrief, you can bid premium units against cheaply constructed units to your project-builder customers.

With Moncrief, you can depend on the price always to be competitive in relation to the excellent qualities available.

With Moncrief, you need not buy large quantities to enjoy a price advantage. Your Moncrief Wholesaler carries your unneeded stock.

Call your Moncrief Wholesaler, now.



Interior View of
Upflow Unit



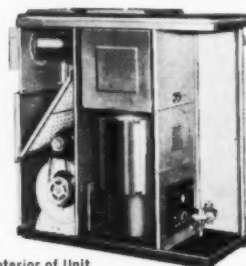
Interior View of
Upflow Unit

GAS FIRED

Assembled and Wired Winter Air Conditioners . . . Upflow, Counterflow and Horizontal . . . Heavy Gauge Heat Exchanger and Cabinet.

OIL FIRED

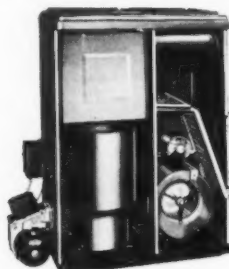
Assembled and Wired Winter Air Conditioners . . . Upflow and Counterflow Heavy Gauge Round Heat Exchanger with Refractory Firebox.



Interior of Unit
with Gas Burner

GAS OR OIL

Basement Type Winter Air Conditioners . . . Burn either Gas or Oil with Equal Efficiency . . . Heavy Gauge Heat Exchanger.



Interior of Unit with Exposed Burner

OIL FIRED

Assembled and Wired Basement Type Winter Air Conditioners . . . Heavy Gauge Round Heat Exchanger with Refractory Firebox.

MONCRIEF

THE HENRY FURNACE

HEATING AND AIR CONDITIONING UNITS



COMPANY • MEDINA, OHIO

FURNACE PIPE AND FITTINGS



Horizontal
Furnaces
4 Oil Sizes
4 Gas Sizes



Year 'Round
Combination
A.C. Units
Air or Water
Cooled, Gas
or Oil Fired



(1) 2, 3, 4, 5 H.P.
Air Cooled Con-
densing Units, (2)
Plenum Evaporator,
(3) Duct Evaporator,
(4) Counterflow
Evaporator, (5) Blower-
Evaporator Unit.

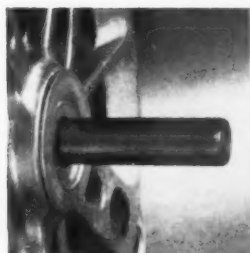


Gas
Conversion
Burners



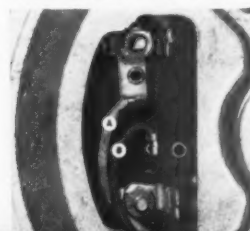
Gas Fired
Unit Heaters,
5 Models

INSTALL IT! FORGET IT!



SHAFT PROTECTION—new gun-metal-like treatment of shaft resists rust so the blower is always easy to remove.

FAST ROTATION CHANGE cuts your inventory in half. Simply reverse leads ("A" to "B").



AIR-SHIELD DESIGN transmits heat swiftly, greatly reducing "trip-outs" that result in time-consuming service calls.

4-YEAR LUBRICATION at factory practically eliminates reoiling. Motor has doubled oil supply.



It's that simple when you use General Electric oil burner motors

General Electric's oil burner motor will give years of reliable service on the oil burners you install, service, or build. This means a high degree of customer satisfaction with the furnace equipment you supply since you practically eliminate call-backs or emergency service calls.

Contributing to the motor's long life are a rust-resistant shaft, a special air-shield design, four-year lubrication at factory (see photos), a wear-resistant switch, and moisture-resistant Mylar® polyester film insulation.

All these extra-value features are yours when you specify "G-E motors" on the oil burners you buy. They're also ideal for replacement purposes. For more information, write Section 738-06, General Electric Company, Schenectady 5, N. Y.

* Registered Trade-mark of DuPont Co.

Progress Is Our Most Important Product

GENERAL  ELECTRIC

NEW

MILCOR BUTTON

LOCK-JOINT

FURNACE PIPE



Easy Locking... Easy Starting

Easiest-locking seam on the market. Start one end and the rest of the seam clicks together with little more than finger-touch pressure. Closely spaced buttons provide continuous lock for entire length of seam. All the joints you need for the job are assembled in minutes — no lost time or effort.

Quick-starting, snugly-fitting connections. Short fade-away crimp on male end of joint guides end quickly into connecting joint. Entire distance from end of crimp to bead provides bearing surface — forms tight, secure connection without use of sheet metal screws.

New Milcor Button Lock-Joint Pipe is offered in 30"-, 60"- and 120"-long joints in popular sizes and gauges. Made from Ti-Co Galvanized Steel. Ask your jobber or write to us for further information and prices.

Member of the  Steel Family

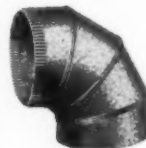
MILCOR

INLAND STEEL PRODUCTS COMPANY

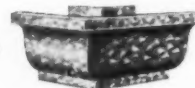
DEPT. F, 4023 WEST BURNHAM STREET, MILWAUKEE 1, WISCONSIN
BALTIMORE, BUFFALO, CHICAGO, CINCINNATI, CLEVELAND, DETROIT, KANSAS CITY,
LOS ANGELES, MILWAUKEE, MINNEAPOLIS, NEW ORLEANS, NEW YORK, ST. LOUIS

One dependable source for all your sheet metal products

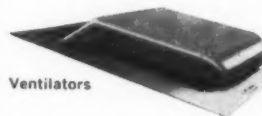
You can stake your reputation on a Milcor installation.



Heating and Air Conditioning Products



Roof Drainage Equipment



Ventilators



WHAT'S HAPPENING . . .

SMACNA Elects Shytle President

BOSTON — Delegates to the Sheet Metal and Air Conditioning Contractors' National Association's annual convention elected D. E. Shytle, Combustioneer Corp., Washington, D. C., president; Harvey E. Anderson, Anderson and Litwack Co., Chicago, vice president; Dion E. Mannen, Mannen and Roth Co., Cleveland, treasurer; and Joseph D. Wilder, executive secretary.

Five new directors were elected for four year terms. These are: R. H. Budde, Budde Sheet Metal Works, Inc., Dayton; A. T. Ihde, Alfred Goethel Sheet Metal Works, Inc., Milwaukee; R. A. Hepper, Puhl and Hepper Mfg. Co., Inc., St. Louis; Wm. J. Knecht, Charles H. Knecht & Sons, Camden, N.J.; and Walter Hoffman, Buensold-Stacey, Inc., New York City.

Directors with one year remaining to serve on the board are: Robert L. Bayless Jr., Valley Sheet Metal Co., Phoenix, Ariz.; R. K. de L'Etoile, Delbrook Engineering Inc., Cambridge, Mass.; and M. A. Waldinger, Iowa Sheet Metal Contractors, Inc., Des Moines, Iowa.

Those with two years to serve are: Gilbert G. Dorsett, Keetch Metal Works, Dallas, Texas; Clovis Hendry, Lundin-Hendry, Inc., Baton Rouge, La.; L. B. McConnell, McConnell Sheet Metal, Inc., Lansing, Mich.; and A. B. Osgood, Day Co., Minneapolis.

Those with terms ending in 1963 are: Roy M. Burk, Western Heating & Sheet Metal, Inc., Olympia, Wash.; Marlowe C. Hodge, Hodge Sheet Metal Products, Los Angeles; J. A. Nyland, Nyland Sheet Metal Works, Indianapolis; Andrew Stuart, Anderson Sheet Metal Co., Providence; and Rogers B. Toy, Carrier Corp., Atlanta.

American Artisan's Articles Win National Safety Council Award



PUBLIC INTEREST AWARD for safety is presented to Clyde M. Barnes, editor, American Artisan magazine, by Clement J. Luepke, National Safety Council, in recognition of efforts to promote safety in the sheet metal and air conditioning industry.

CHICAGO — "A tangible expression of appreciation for exceptional service to safety," said Howard Pyle, president, National Safety Council, in describing the council's Public Interest Award for 1959 recently presented to American Artisan. In notifying American Artisan that it had been selected for the award, he said: "We at the council know all you have been doing for safety and are well-pleased with the judges' decision."

The award-winning contribution to safety was a series of four articles published by American

Artisan in August, September, November and December 1959 on safety in the sheet metal shop and at the job site. The series was published under the title of "The ABC's of Safety."

The articles are based on first-hand experience of sheet metal contractors engaged in both large and small operations, and who handle both custom work and production jobs regularly. These articles were reviewed by industry people who recommended that they be posted on bulletin boards to remind employees to practice safety at all times.

U.S. Income, Employment Near Peak

WASHINGTON, D. C. — The economy is operating at a generally high level with income and employment being maintained at or near peak rates, according to the United States Department of Commerce. Personal income in the first quarter of 1960 was at a seasonally adjusted annual rate of \$393 billion, \$21 billion above last winter's total.

A sizable portion of manufacturers' output in recent months has gone into the rebuilding of inventories, according to the department. At a seasonally adjusted rate of \$54 billion by the end of February, factory stocks, which began to rise last December, were up \$4 billion from the figure reported a year ago.

(More news on page 18)



**STANDARDIZE 100%
ON SOUTHERN
FASTENERS**



Today cost-conscious management men are taking a new look at quality fasteners as a partial solution to production and installation problems. These men know that faulty fasteners often take a big toll in profits because of rejects, slow-ups, or spoilage. Likewise, they know that quality fasteners help insure more profitable operations through faster applications in the shop and on the job.

It's good sense to standardize 100% on Southern fasteners for super-savings and for profit. Southern specializes in standard fasteners for the metal industry. All are USA-made in our own plant.

Ask your nearest Southern distributor for information about your requirements, or write direct to Southern Screw Company, P. O. Box 1360, Statesville, N.C.

Manufacturing and Main Stock in
Statesville, North Carolina

Warehouses:
New York • Chicago • Dallas •
Los Angeles

Tapping Screws • Machine Screws &
Nuts • Stove Bolts • Drive Screws •
Carriage Bolts • Continuous Threaded
Studs • Wood Screws



WHAT'S HAPPENING...

Helium Scarcity May Increase Natural Gas Cost

WASHINGTON, D. C. — With yearly business and military use nearly 100 times what it was two decades ago, it's vital that we conserve our resources of helium, according to the Chamber of Commerce of the United States. Recently, the chamber points out, business use in mining, medical and other fields has been restricted. To meet growing demand, the secretary of the interior has asked Congress to approve bills (H.R. 8440, H.R. 8451 and H.R. 10548) aimed at conservation and storage of helium gas now being wasted in marketing natural gas. Existing government set rates aren't enough to warrant recovery of helium by commercial producers as a natural gas by-product, according to the chamber.

The need for scarce helium may ultimately result in an increase in the cost of natural gas.

New Chapter For IHACI

LOS ANGELES — Newly organized chapter of the Institute of Heating and Air Conditioning Industries is the San Fernando Valley Association. According to Gerson Ribnick, managing director of IHACI, plans are under way to organize chapters in Long Beach and in San Gabriel valley. Under the organizational setup, each chapter will be autonomous, but must adhere to the IHACI bylaws, Mr. Ribnick said. Each will be represented in IHACI through two elected board members.

(More news on page 22)

for
all-star
sales performance
sell
LINCOLN

- HIGHEST QUALITY
- FULL FLEXIBILITY
- HANDSOME PROFITS



**LINCOLN AIR-COOLED
CONDENSER UNITS**

Two styles—2, 3, 4, 5, 7½, and 10 horsepower capacities — economical to operate — easy to service.



LINCOLN EVAPORATOR COILS
Hi-Boy and Lo-Boy, Counter-Flow and Horizontal Models for all applications.



EVAPORATOR-BLOWER UNIT
Ideal for attic, basement, or crawl space installation — 2, 3, 4, 5 and 7½ horsepower capacities.

LINCOLN
AIR-CONTROL
PRODUCTS, INC.

Manufacturers of Heating and Cooling Equipment

SWARTHMORE, PENNSYLVANIA

HUSSEY COPPER'S WORKABILITY MEANS ON-SITE SAVINGS

One of copper's biggest advantages in building products is its workability. Copper is easy to work with . . . easy to form on the job . . . easy to join . . . easy to solder . . . and its flexibility serves you in the tight spots, where hand forming is essential. It makes your job easier every inch of the way—saving you both time and money.

Hussey produces a wide range of copper building products to meet every copper need. Specify Hussey to be certain you're getting the finest quality copper available.

Warehouses located in: Pittsburgh, Cleveland, Cincinnati, Chicago, St. Louis, Philadelphia and New York.

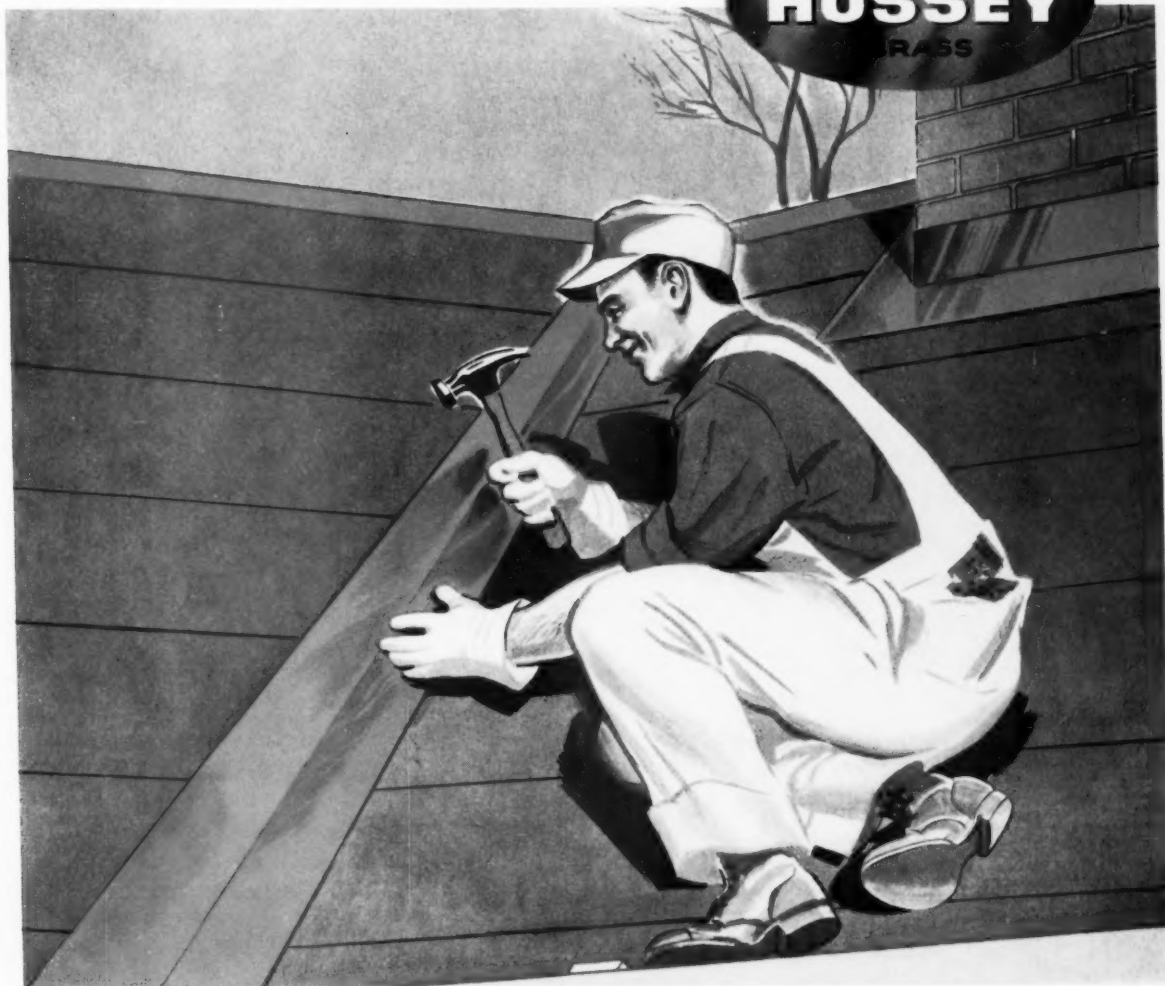
QUALITY BUILDING PRODUCTS BY HUSSEY

Copper Sheet Metal	Roll Copper Flashing
Copper Eave Troughs	Copper Conductor Pipe
Copper Ridge Roll	Roof Drainage Accessories
Majestic 3-way Thru-Wall Copper Flashing	
Standard 3-way Flashing	Parapet Wall Flashing
Copper Tubing	Copper and Brass Pipe
Copper Nails	

C. G. HUSSEY & CO.

Division of Copper Range Co.

ROLLING MILLS AND GENERAL OFFICES
PITTSBURGH 19, PA.



ANOTHER IN  HONEYWELL'S DIAMOND JUBILEE PARADE OF PRODUCTS

The most exciting advance since HONEYWELL'S



For the first time — you can offer a convenient **master** control for year-round air conditioning — that your customer can put in **any** room of his choice, right at his fingertips!

This Diamond Jubilee product was especially designed to help you sell more year-round air conditioning systems. Honeywell's new Weather Station is a complete, precision instrument that's as reliable as it is attractive. It controls indoor comfort and checks outside weather conditions from a single, central location. The convenience of a clock, with its night setback feature, a barometer and humidity indicator also are provided. The panel also includes a warning light for clogged filter and other minor disorders, thus eliminating nuisance service calls.

This amazing new air conditioning control is typical of many benefits you gain by working with Honeywell. When you handle Honeywell products, you have simplified inventories, easier installation and prompt, nationwide service when you need it.

For more information about Honeywell's new Weather Station or Honeywell's complete line of control systems for heating and cooling, phone your nearest Honeywell office, or write:

Minneapolis-Honeywell,
Dept. AA013, Minneapolis 8, Minn.

Sell these Weather Station benefits to your customers!



It eliminates
nuisance service calls



He can be his
own weather man



No more trips
to the basement



Honeywell's new Weather Station is being pre-sold for you to your prime prospects beginning in the April issue of *Better Homes and Gardens* and continuing throughout 1960.

air conditioning itself

NEW WEATHER STATION!



Honeywell



First in Control
SINCE 1885

WHAT'S HAPPENING . . .

(Continued from page 18)

Winning Apprentices, Committees Get Awards in 11th Annual Contest

CHICAGO — The National Joint Apprenticeship and Training Committee for the Sheet Metal Industry has announced the winners in its eleventh annual National Joint Apprentice Award Contest. Each winner received a certificate of award as well as a cash prize. According to Joseph J. Kaberlein, secretary of the committee, more than 2000 sets of problems were distributed to local committees for re-distribution to apprentices in the first, second, third and fourth year phases of their training. Each committee conducted a local contest and entered first place winners for each category to compete in the national contest. Winners are as follows:

First Year — First award, Arthur Dee Brown, Rushville, Mo., Employer: Quality Sheet Metal, St. Joseph, Mo. Second award, William L. Nowak, West Seneca, N. Y. Employer: Goergen & Macwirth, Buffalo, Third award, Eugene Gagnon, Minneapolis. Employer: Day Sales Co., Minneapolis.

Second Year — First award, Patrick B. Troutman, Chicago. Employer: Narowetz Heating and Ventilating Co., Chicago. Second award, Robert Eugene Rinner, Tulsa, Okla. Employer: Moran Furnace and Sheet Metal Co., Sapulpa, Okla. Third award, Pierre Barmore Jr., Seattle. Employer: Holaday & Parks Fabricators, Inc., Seattle.

Third Year — First award, Robert W. Mutter, Buffalo. Employer: Flexlume Sign Co., Buffalo. Second award, Willard Biller, Akron. Employer: Kasch Roofing Co., Akron. Third award, Willie Jay Adams, Pascagoula, Miss. Employer: Ingalls Shipbuilding Corp., Pascagoula, Miss.

Fourth Year — First award, Charles Hawkes, West Peabody, Mass. Employer: Boston Naval Shipyard, Boston. Second award, Jack Osborne, Pocatello, Idaho. Employer: Vogt Sheet Metal Co., Pocatello, Idaho. Third award, Edward Daniels, East St. Louis, Ill. Employer: Westerheid Sheet Metal, East St. Louis, Ill.

The Los Angeles Sheet Metal Workers' Joint Apprenticeship Committee was selected winner of the plaque award for the greatest contribution to the training and guidance of apprentices during the past year. Honorable mention went to the Portland Sheet Metal Worker Trade Apprenticeship Committee of Portland, Ore., for its achievements in apprentice training during 1959.

NMWA Sets Performance Standards for Insulation

NEW YORK CITY — Performance standards for house insulation have been written and adopted by the National Mineral Wool Association. A new designation of "installed resistance" gives the total insulating value of any installed slag or glass mineral wool product plus the values of adjacent air spaces and surfaces. This supersedes references to thickness and type of facing as standard specification terminology.

The standard for electric heating and air conditioning conforms to the requirements of the "All-Weather Comfort Standard," recently developed by electric utilities and manufacturers of air conditioning and electric heating equipment, insulation and win-

New England Servicemen Take OHI Exams

NEW YORK CITY — One hundred New England oil burner servicemen recently took the Oil Heat Institute of America's certification examinations. The exams were held at Newton Junior College, Newton, Mass., under the sponsorship of the Oil Heat Institute of New England. Two types of examinations were given, one covering high pressure gun type burners, the other, low pressure and rotary burners. In either case, to be certified a serviceman must score a grade of 80 percent or better.

OHI certified technicians are given recognition in the form of a wallet card and lapel pin attesting to their certification as qualified technicians.

dow glass. The All-Weather standard is being accepted as the basic guide to thermal design of electrically heated and air conditioned houses, according to the National Mineral Wool group. This standard recommends maximum allowable heat flow for ceilings, walls and floors of year 'round air conditioned houses. This is expressed in "U" values — the rate of heat transfer between the air inside a house and the air outside. The same values apply for both heat loss and heat gain. They are:

Ceilings	0.05
Frame walls	0.07
Floors over vented crawl spaces	0.07

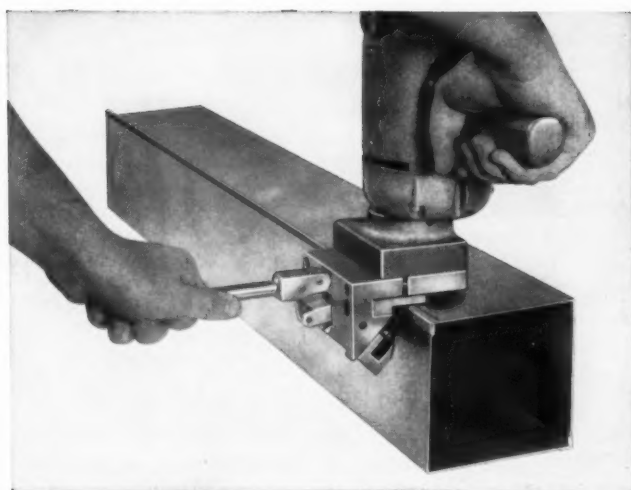
National Mineral Wool Associ-

(Continued on page 25)

ANOTHER 1ST FROM MILLERS FALLS

Shhh!

Swoosh!



No. 518 LECTRO-LOK. Complete with slides that form $\frac{3}{16}$ " pocket. Slides for $\frac{3}{8}$ " and $\frac{1}{2}$ " pocket also available

- **WIDE CAPACITY**
18 to 28 gauge metal
- **LIGHT, PORTABLE**
Use it on the job
- **MAKES PERFECT SEAMS** — Smooth and tight
- **TAKES SHARP CURVES**
— down to 10" radius

Now you don't have to put up with the old, slow and noisy hammer method when fabricating sheet metal. Just position Lectro-Lok on open seam, bring down locking bar, press the trigger and tool 's-w-o-o-s-h-e-s' along metal seaming it automatically. No need to store and truck bulky ducts, either. With Lectro-Lok you can fabricate the metal to fit the job . . . right on the job! Powerful 5 amp. ball bearing motor insures fast, trouble-free performance even on long runs of heavyweight sheets. For better seams faster . . . cheaper—put new Lectro-Lok to work on your next job.

Write for full information
MILLERS FALLS COMPANY
Dept. AA-1, Greenfield, Mass.

**MILLERS FALLS
TOOLS**

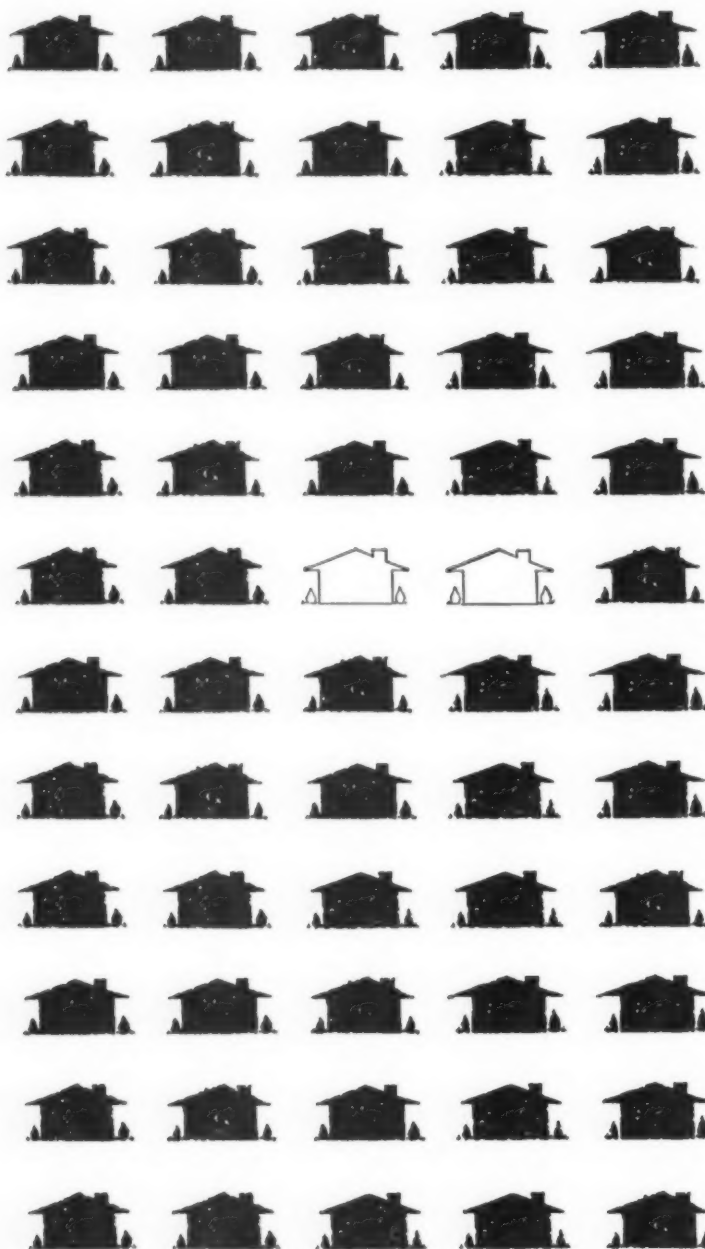
SINCE
1868

HAND TOOLS

PRECISION TOOLS

METAL CUTTING SAWS

ELECTRIC TOOLS



You can replace 98% of the oil burner filters in your territory with just four **PUROLATOR** elements

With a small inventory of just *four* Purolator filter elements, you're set to handle the replacement needs of 98% of the oil burner filters on the market—old ones, new ones, and most of the odd sizes.

Once you've installed a Purolator you're set for a long time. Purolator elements filter finer (down to 0.0005") and longer (they last a year or more without servicing) than any other filter element on the market. With Purolator, you'll be spared the usual emergency calls to replace nozzles that have failed because of abrasive dirt. And a year or more from now, at replacement time, you'll appreciate the way the Purolator element pops out on a spring to make replacement neat and easy.

Purolator has a cross-reference chart that shows you which Purolator elements will fit which brands of oil burner filters. You can get a free copy of the chart by filling in the coupon and sending it to Purolator Products, Inc., Rahway, New Jersey.

Purolator Products, Inc., Dept. 2578
Rahway, New Jersey

Please send me the Purolator Cross Reference Chart showing the correct Purolator filter element for eight major brands of oil burner filters.

Name

Company

Address

State City Zone

Filtration For Every Known Fluid

PUROLATOR

PRODUCTS, INC.

RAHWAY, NEW JERSEY AND TORONTO, ONTARIO, CANADA

WHAT'S HAPPENING . . .

(Continued from page 22)

Adopt House Insulation Standards

(Continued from page 22)

ation, in accepting the All-Weather standard, recommended "installed resistance" designations as a means of showing which specific mineral wool products are suitable for ceiling, wall or floor application. "Installed resistance" is defined as "resistance of the mass insulation itself, plus the resistance value of the air spaces and surfaces that come into existence when the insulation is installed."

Installed resistance values, represented by the symbol "R", that have been adopted to conform to the All-Weather standard are:

	R Factor	U Value
Ceilings	19	0.05
Frame walls	11	0.07
Floors over vented crawl spaces	13	0.07

Members of National Mineral Wool Association in the future will mark all batts and blankets with appropriate "R" numbers.

Urge ARI Certified Units for Air Force

WASHINGTON, D. C. — Air Force Pamphlet No. 91-2-1 recommends that future air force specifications for unitary air conditioning equipment contain a sentence similar to the following: "The air conditioning equipment to be supplied or installed under these specifications shall be certified under the Air Conditioning and Refrigeration Institute Certification Program. The manufacturers of the equipment shall furnish to the Contracting Officer a copy of ARI listing or ARI certification of the equipment."

Silver Shield Headquarters Gives Tips on Local Sales Promotion

CLEVELAND — "Advertising your Silver Shield systems to your local buying public is an important part of your Silver Shield program," Randall Nelson, Director of Public Relations, National Warm Air Heating and Air Conditioning Association, recently told members of local Indoor Comfort Bureaus. To help local bureaus get the greatest benefit possible out of advertising appropriations and efforts, NWAHACA suggests the following basic rules which should apply in most cases:

1) Use newspapers for your first advertising effort. Printed ads can be seen, can be read and re-read. They can be clipped, passed around and discussed. Save other forms of advertising — radio, T-V, etc. — for later.

2) First advertising should be informative. It should explain what Silver Shield is and what it will do for the purchaser of a warm air heating system.

3) Your newspaper program should run for a minimum of three months. You can't expect results in a hurry. You have an educational job to do with the public before you can expect much buying action. This takes time and repeated messages.

4) Make use of ads available from Silver Shield headquarters. These can easily be changed to fit local conditions.

5) Whatever type of advertising you decide upon — newspaper, radio, T-V, or outdoor posters — stay with the medium you have chosen and keep your program aimed at one audience. You'll get nowhere with three or four half-cultivated audiences.

6) Make use of the free publicity which is available to you in the editorial pages of local news-

papers. NWAHACA is preparing sample news releases which will be sent to local bureaus upon request.

New Unitary Certification Directory Issued

WASHINGTON, D. C. — A second quarter directory of certified unitary air conditioners is now being distributed by the Air-Conditioning and Refrigeration Institute as a part of its unitary air conditioning certification program. The new directory lists some 2150 unitary models of 48 manufacturers who have signed contracts to participate in the program. It is being distributed, as were its predecessors, to dealer-contractors throughout the country, to architects and consulting engineers, and to government personnel concerned with air conditioning. It is also available to the public through dealer-contractor outlets of participating manufacturers.

Conrad Named WAHINC Executive Manager

SAN FRANCISCO — New executive manager of the Warm Air Heating Institute of Northern California is Charles S. Conrad. Before joining WAHINC, Mr. Conrad was with Tay-Holbrook, Inc., northern California wholesaler, and before that was general manager of sales on the west coast for United States Steel Corp. The association's executive offices are located at 870 Market St., San Francisco.



What's the difference in ductwork? At first glance, all ductwork looks about the same. But if the ductwork you install is fabricated from USS Galvanized Steel Sheets, you'll be getting high quality that is obvious to the eye. You can tell it's good because even severe bending and lock seaming don't cause the protective zinc coating to flake off the base metal. Less soldering and riveting are needed because Steel is strong and rigid and lock joints stay tight. This rigidity reduces expansion and contraction noises, allows longer spans with fewer supports and makes installation quicker and easier. For high quality, economical ductwork, specify USS Galvanized Steel Sheets for your next job.

USS is a registered trademark



This mark tells you a
product is made of modern Steel.

United States Steel 

A Prescription for Healthy Business Growth

RECENTLY, we visited a subscriber who started in business a little over two years ago, and has enjoyed a good increase in his volume since then. During the past winter, he realized that he needed a larger building. After looking around in the area where he wanted to do business, and failing to find a building that suited his needs, he decided to have one constructed to his own specifications.



We asked him what his prescription was for the healthy growth in business that warranted the expenditure for a new building and why he was confident his volume would continue at the present rate. His answer was, "You've often heard it said, 'It's not what you know but who you know that makes success possible.' I don't believe this. I believe it's both what you know and who you know. Knowing the right people may provide some of the opportunities for success, but without the proper qualifications you will surely fail."

He also believes no one moves ahead in business unless he is willing to take a calculated risk when the occasion demands it. Further, that a businessman must never stop learning. He learns not only from experience, but from books, other business sources, from magazines, and from people with whom he comes in contact daily. When a person stops learning, someone comes along who passes him up.

Thus, one of the best tools to offset competition is a continuous training program — both for oneself and one's employees.

The best way to initiate a training program is to set a goal. Usually the dealer-contractor can set a business volume as his goal and then outline the procedures that he will use to achieve this goal. To employees, he can offer an incentive plan. Employees with incentives over and above that of cash remuneration make better employees and help cut operating costs to the bone.

Much of a dealer-contractor's business comes from friends and business acquaintances who respect his ability. One way he can broaden his list of friends and acquaintances is through joining associations such as business and social clubs, civic groups and organizations of the members of his own craft.

A person active in an association is in an excellent position to learn a number of things. Also, by checking and double-checking his ideas with others in the group, he can avoid many of the problems that have been faced and solved by others.

Our friend who recommended the calculated risk also says a businessman must never break a promise, because to be successful, you must have a reputation for reliability. Promises must be kept, no matter how unimportant the person to whom they are made may seem to be, because such a person may become important in the future, or those he comes in contact with can very well be the important people you are trying to reach.

These are a few rules that may prove fruitful to those who use them.

Cooling Standards Card —

Proves "Ideal Sales Tool" To Fulfill Prospect Needs



Standards card enables this dealer-contractor to tell the "Good" story because he knows the prospect wants something better and welcomes unbiased guidance

"As a DEALER-CONTRACTOR, I feel a prospect can be served best by helping him buy the kind of job he needs," says Herb Tanis, Ridgeway Heating and Air Conditioning Service, Lansing, Ill. "That's why I believe the Standards for Rating Residential Cooling Systems is an ideal sales tool. It provides the prospect with a list of points that enable him to understand the basic functions of a central summer air conditioning system. The card also provides the prospect with a basic understanding of summer air conditioning so he can ask questions that are essential in making a wise decision when placing the order.

"The *Standards* card is also an excellent sales tool for the dealer-contractor because it enables him to use the 'Good' classification to sell a better job with the result that he is able to earn a better profit.

"Prospects generally don't want 'Poor' jobs and will listen to the 'Good' story," continues Mr. Tanis. "They want something better and welcome unbiased guidance. The *Standards* card serves this purpose very well, that's why we use it."

Selling Procedure Builds Confidence

Selling is a thorough procedure at Ridgeway Heating and Air Conditioning Service. Every effort is made to go beyond the point of getting the signed contract because it is felt that each customer fills four major capacities in the company's operation: 1) He is the current sale; 2) A customer with confidence

is a satisfied and happy customer; 3) Satisfied customers are your best salesmen; and 4) Accessory sales volume is highest among sales promotion directed to the old customer list.



STANDARDS FOR RATING Cooling Systems card is part of sales portfolio taken on every call by David Tanis, Ridgeway Heating and Air Conditioning Service



PROSPECT is given a Cooling Standards card and is shown how heating equipment is adapted to provide year 'round comfort when designed to meet the requirements spelled out on the Standards card

Sales are frequently made by taking prospects for a demonstration at the home of a satisfied customer. "We are always welcome," says Dave Tanis, company salesman, who is on a first name basis with many of the company's customers because of his frequent contacts with them.

Many of the company's prospects come from contacts with business people because Ridgeway Heating Service has built a reputation as "Year 'Round Air Conditioning Headquarters" in the southeastern Chicago area.

Many of the company's older customers are local merchants who have installed warm air heating and summer air conditioning equipment. These merchants recommend to people they come in contact with to see Ridgeway Heating and Air Conditioning Service if they are interested in either installing a heating or an air conditioning system or both.

The company started business in 1935 and has grown with the warm air heating industry. It was one of the first dealer-contractors in the country to use buried ducts in concrete floors to provide warm floors in houses built on a slab. Much of the experience gained by the dealer-contractor was used by research groups to advance perimeter heating.

"We want our customers to know our company well," says Herb Tanis. "Therefore, we invite each prospect to visit our company office, showroom and shop before they place an order."

The procedure followed for each prospect who



ATTENTION given to design is pointed out to prospect at drafting table where a job in progress makes it easy for the prospect to visualize the numerous items involved in providing the type of air distribution system and equipment required

accepts this invitation begins with a description of the kind of equipment that will be used on the job for the prospect's home.

Usually the first part of the tour of the company's facilities begins with the presentation of a copy of the Standards for Rating Residential Cooling Systems card. The card is briefly described to the prospect at this time and she is told to keep it.

Use Standards Card As Guide

As the prospect is shown the equipment and hears how the heating system is easily adapted to a year 'round system by the addition of cooling coils and a condensing unit, the points relating to summer air conditioning are pointed out on the *Cooling Standards* card.

The second step is to show the prospect how a job is engineered to provide the type of air distribution system and equipment capacity required for each individual job. This is explained at a drafting board where usually a job is in process and the steps necessary to provide a "Good" system are emphasized.

The third step is an introduction to one of the firm's partners, Herb Tanis, who takes the prospect in hand and shows how the job is followed up once it has been designed, and how the records of each job are kept. He also shows the prospect how copies of the drawing are made and explains that an extra



DUPLICATE COPIES of floor plans and duct layouts are made, one for the prospect and the other for company files. Herb Tanis, one of the company's partners, shows the prospect how additional copies can be obtained at any time with the aid of the copying machine on the file cabinet



"THIS IS THE PIECE of equipment that we will use in your house," has proven a very effective sales point for Ridgeway Heating and Air Conditioning Service

copy is made and left with the owner upon completion of the job. The equipment used for the reproduction of the drawings has proven to be an effective and confidence-building sales tool.

Let Prospect See Equipment

Next, the prospect is taken into the warehouse and shown the variety of stock carried on hand. The point is made that with such a large variety of equipment, it is no problem to select and install the right capacity unit to meet the customer's needs.

In cases where the job has already been engineered and the equipment sized, the statement "This is the piece of equipment that we will use on your house" is made as Herb Tanis grasps a shipping crate and points out its sturdy frame to show that the equipment is delivered intact and in good shape to the job site.

Following this demonstration the prospect is introduced to William Van Ramshorst, another partner in the business, who describes to the prospect the com-



LARGE SERVICE PARTS STOCK gives prospect confidence in the company's ability to make quick repairs when they are needed

pany's history and reputation for installation and service skill. He points out that all of the company's servicemen and installers have attended factory schools after having completed four-year apprenticeship training programs and several years' experience in the field. He also explains that periodically every member of the staff attends manufacturers' schools to keep up with the latest equipment and techniques.

The prospect is shown the huge stock of service parts that insures quick service at any time of the day or night. This inventory of service parts is valued at \$10,000 but often the amount of money invested exceeds this.

Show How Job Is Handled

The prospect is then taken to the repair bench and shown the instruments used for completely overhauling and testing all heating and cooling equipment.

Finally, the prospect is taken to the sheet metal shop and sees the variety of tools which the shop uses to fabricate any type of fitting required. Herb Tanis

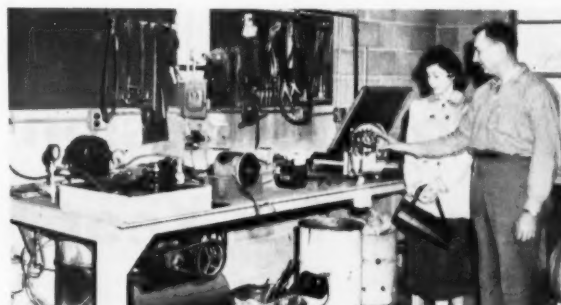
Build confidence by taking a prospect on a tour of your plant to show how a job is followed-up, and explain how your firm is able to install and service the type of heating and air conditioning system required



INSTRUMENTS USED to check repaired and overhauled equipment are used as a sales aid to show that protesting helps to eliminate other possible repairs



SKILL IN FABRICATING duct sections and fittings builds additional confidence in the installation job that will be done for the customer



SERVICING SKILL and repair facilities are explained to the prospect by William Van Ramshorst, one of the company's officers. He also describes the company's history and reputation for installation and service skill

feels this procedure also leaves its impression upon the prospect as to the ability of the company to install the type of heating or air conditioning system required, and to maintain it properly at any time of the year.

Tell About Satisfied Customers

The prospect is then brought back to the display room and is asked to refer to the *Cooling Standards* card. The points listed on the card form the topic of conversation for a central residential air conditioning system that the prospect is interested in, and an invitation is extended for the prospect to make a visit with either Dave or Herb Tanis to one of the company's customers who has an installation similar to the one required by the prospect.

As the sales presentation continues along the line of satisfied customers, the company's reputation among local merchants is brought into the conversation.

It is pointed out that many of the local merchants are customers of Ridgeway Heating and Air Condi-

tioning Service. Some of the well-known local restaurants are named and it's pointed out that the air conditioning equipment used was installed by the company. Other air conditioning jobs that are mentioned include furniture stores, funeral homes, the V. F. W. Club, and several light manufacturing plant offices.

Each of the names brought into the conversation are usually well-known to the prospect because of the prestige accorded to the local merchants or manufacturers.

Standards Card Continues to Sell

"We believe in the prospect keeping the *Cooling Standards* card because it is an effective sales tool that helps us explain central summer air conditioning to the prospect. It continues to be a selling tool once the prospect leaves because it acts as a conversation piece that the prospect can use when talking about their new summer air conditioning systems to their friends and neighbors," says Herb Tanis.



1 Southwest view of split-level house of the type chosen as example of year 'round air conditioning system design

How to Design A Split-Level House for Year 'Round Comfort

A careful accounting of the heat loss or heat gain in a split-level house is essential because of the variety of construction and building materials included. In a split-level house with a properly designed year 'round air conditioning system, warm air need not collect on the upper levels or cold air on the lower levels

By Edward J. Brown
Research Associate
University of Illinois

OPEN STAIRWAYS allow free movement of air between the house levels. The air movement presents no problem if the heating and cooling systems are properly designed.

An exterior view of a split-level house of the type that we have chosen to illustrate the design of a year 'round air condi-

tioning system is shown in Fig. 1. The view is from the southwest, and shows the living room windows, front entrance and the garage with the bedroom area above. Two floor plans of our typical split-level house are shown in Fig. 2.

The house has four levels. The basement on the first level includes a laundry and workshop plus space for the year 'round air conditioning unit.

Family room and garage are on the second level. The family room provides an adequate play

area for children and a family recreation area.

Living room, dining room and kitchen have ceilings which follow the roof line. The living room has large picture windows which extend from floor to ceiling. Table 1 is a window schedule for the entire house which describes the type, area and crack length of the windows in each room.

The fourth level has four bedrooms, two baths and attic space above.

Basement walls are uninsulated concrete block. The windows are

Table 1 — WINDOW SCHEDULE

Room	Type	Total Glass Area, Sq Ft	Crack Length, Ft
Basement	Steel, single glazed	8.0	32
Family Rm	Aluminum sliding doors with fixed double glazing	49.0	28
Kitchen	Wood, Single glazed with storm sash	9.6	13
Living Rm	Wood, fixed double glazing; wood, single glazing without storm sash; and wood, single glazing with storm sash	131.0	40
Entry	Wood, single glazed with storm sash	3.5	7.5
Bed Rm 1	Wood, single glazed with storm sash	25.0	21.0
Bed Rm 2	Same as Bed Rm 1	13.0	10.5
Bed Rm 3	Same as Bed Rm 1	25.0	21.0
Bed Rm 4	Same as Bed Rm 1	13.0	10.5
Bath 1	Wood, single glazed with storm sash	6.7	7.5
Bath 2	None		

steel sash of average fit. Family room has a concrete floor that's surfaced with asphalt tile. The aluminum sliding glass doors, which have fixed double glazing, are the only windows in the family room. Brick exterior walls are backed with 8 in. concrete block and are not insulated. A 4 in. concrete block wall forms a partition between the family room and garage.

Third Level Glass Area

Walls of the third level are frame and brick veneer, and include 3 in. glass wool batt-type insulation. The awning-type wood windows in the kitchen and dining room are provided with storm sash to be used during the heating season only. Large windows in the living room have awning-type sash in the lower sec-

tion and 4 by 6 ft fixed double glass in the sections above. The irregular shaped glass areas between the windows and the ceiling are of single plate glass construction, and are not equipped with storm sash.

Types of Insulation

Floors on this level, and on the bedroom level have diagonal sub-flooring and finished oak flooring except for the kitchen and bathroom floors which are finished with vinyl tile. An insulation blanket of 2 in. thickness above the garage ceiling reduces the heat loss and heat gain to the bedroom floors above.

The bedroom level has frame walls with exterior redwood siding. These walls also have 3 in. batt-type insulation. Ceilings on this level, and the living room

level have 3 in. glass wool insulation.

Where Problems Occur

The uninsulated walls in the family room, large windows in the living room, and the bedroom floors over the garage present heating and cooling problems which are typical of this type of house.

However, heat loss and heat gain may be readily calculated by the procedures outlined in the National Warm Air Heating and Air Conditioning Association's Manuals 3 and 11, respectively.

Calculating Heat Loss

A careful accounting of the heat losses is essential because of the variety of constructions included in the house. Table 2 is a summary of the heat losses. The losses through windows and doors, walls, cold partitions, cold ceilings, cold floors, and the loss due to infiltration are listed for each room. The heat losses are also listed for each house level and for the entire house. Design conditions of -10 F outdoor temperature and 70 F indoor temperature were assumed.

Sources of Heat Loss

The basement requires heating because of the laundry and shop areas. Heating the basement will also improve the floor surface temperatures of the living areas above. Principle heat loss is through the above grade area of the walls. Next greatest loss is due to infiltration around the windows. The heat loss through the cold partition between the basement and the garage is small, but none of the losses should be neglected.

Greatest heat loss occurs in the family room because of the uninsulated walls. Infiltration around the sliding glass doors is the next

greatest loss.

The concrete slab is in contact with the ground and the edges are above grade. To provide acceptable floor surface temperatures, a perimeter duct embedded in the slab is used. The heat loss through the heated slab will be 730 Btuh with a 1 in. edge insulation.

Walls and ceilings of the living room level are well insulated. The windows are the greatest sources of heat loss, which amounts to 60 percent of the total room heat loss.

The bedrooms do not have large windows, and the walls and ceilings are well insulated. None of the rooms have unusually high heat losses. Heat losses through the cold floors above the unheated garage have been included in the total.

Total Heat Loss

Total heat loss of the house is 92,180 Btuh and includes all sources. It was not possible to determine the loss by multiplying the house floor area or cubic contents by a "magic number." Since the heat loss calculations were made in accordance with Manual 3, the total of 92,180 Btuh is a final figure and is the one which should be used for the purpose of selecting a furnace.

Calculating Heat Gains

Heat gain calculations are based on outdoor conditions of 95 F dry bulb, 76 F wet bulb and an indoor dry bulb temperature of 75 F. Table 3 is a summary of the heat gains. The sensible heat gains are separated into two listed classifications; those due to indoor-outdoor temperature difference, and those due to direct sun gain through glass.

The front entrance of the house faces west. Direct sun load gains and the total sensible heat gain for each room is listed for the house

Table 2 — Summary of Heat Losses, Btuh

Room	Windows and Doors	Walls Above Grade	Below Grade	Cold Part's	Cold Clgs.	Cold Floor	Infil.	Total
Basement	720	7210	2700	415		3110	4100	18,255
Total For Level								18,255
Family Rm	2400	6560		2810		3730	4480	19,980
Hall				1405				1,405
Powder Rm.		1450				760		2,210
Total For Level								23,595
Kitchen	1460	810			1150		2590	6,010
Dining Rm	1070	1120			880		1980	5,050
Living Rm	7100	1670			2280		800	11,850
Entry	1130	230		385	655		1750	4,150
Total For Level								27,060
Bed Rm 1	1175	1225			1450		1600	5,450
Bed Rm 2	610	665			975	490	800	3,540
Bed Rm 3	1175	1310			1390	700	1600	6,175
Bed Rm 4	610	1085			1470	735	800	4,700
Bath 1	330	540			505		1000	2,375
Bath 2					360			360
Hall					670			670
Total For Level								23,270
HOUSE TOTAL								92,180

if it were facing north, east or south (column 3). The direction affects this heat gain because of the greater effectiveness of the roof overhang as a shading device with the house facing one direction as compared with others. Latent heat gains, plus the sensible heat gains for each room, with the house facing west, are shown in the righthand column. No heat gain is listed for the basement since it is not to be cooled.

Major Heat Gains

The major gain due to indoor-outdoor temperature difference of 2505 Btuh occurs in the family room where the exterior walls are not insulated. Insulation in the walls, ceilings and floors of other rooms reduces these heat gains to more reasonable values.

If the house were facing east, the direct sun gain through the glass doors of the family room would amount to 3180 Btuh. No direct sun gain through glass is listed for the family room when the house faces west or south.

The procedure given in Manual No. 11 includes a step in which the direct sun gains through glass on all sides of the house are calculated.

Final Calculation

In the final calculation, the direct gain on one or two sides of the house (but not on all sides) is used to determine the total heat gain. For example, with the house facing west, only the glass areas in the living room and bedrooms 3 and 4 are important in the final calculation of direct glass gains.

The blank spaces in the table indicate facing directions not included in the final analysis.

When the house faces north or east, the living room glass areas are not important in the final calculation. If the house faces south, the living room glass would be protected by the roof overhang. In this case, direct sun gain would be reduced from the west facing value of 5850 Btuh to 2280 Btuh.

Don't Overlook Shading

The importance of shading devices must not be overlooked in load calculations. Figures in Table 3 are derived by considering the use of interior shading devices such as draperies or venetian blinds. When closed, these shading

devices will reduce heat gain through a west window, exposed to the sun, by 85 Btuh per sq ft of glass area. Where exterior shading cannot be accomplished with a roof overhang, awnings or shade screens should be considered.

Heat Gain Allowances

The latent heat gain allowance recommended in Manual No. 11 is 0.3 times the sensible heat gain. The last column in Table 3 gives the sum of sensible and latent heat gains for each room with the house facing west. The total heat gain is 40,080 Btuh. With the house facing north, east, or south the heat gains would be 33,185 Btuh, 38,000 Btuh and 34,230 Btuh, respectively.

All of the total heat gains include an allowance for 4 people in the living room and 4 people in the family room. The fact that the load varies by as much as 7000 Btuh, depending on the orientation, shows that the total heat gain cannot be determined solely from the product of the floor area and some arbitrary value of heat gain per sq ft.

Design procedures for a split-level house air distribution system will be discussed next month. You will be shown why the proper location of supply ducts is considered to be more important than the location of the return intakes in preventing drafts and providing acceptable temperature differentials within the occupied zones of the rooms.

Table 3 — Summary of Heat Gains, Btuh

Table 3 — Summary of Heat Gains, Btuh														
Room	Gain Due To Temp. Diff.				Direct Sun Gain Through Glass				Sum Of Sensible Heat Gain				Latent Heat Gain (0.3 x Sensible Heat)	Sensible plus ² Latent Heat Gain, Btuh
	Infil.	Wind.,	Walls,	Clg. Flr.	House Facing				House Facing					
	and Doors				W	N	E	S	W	N	E	S		
Family & Hall	745	540	2505			1470	3180		4990 ¹	6460	8170	4990	1500	6490
Powder	130		230						360	360	360	360	105	465
Total For Level														6955
Kitchen	350	760	210	450		150	650		1770	1980	2430	1780	530	2310
Dining	480	550	290	340			1430		1660	1660	3090	1660	500	2160
Living	720	1675	595	5875		5850		2280	10915 ¹	5065	5065	7345	3285	14200
Entry	100	600	60	255					1015	1015	1015	1015	305	1320
Total For Level														19990
Bed #1	525	625	370	625		390	845		2145	2535	2990	2145	640	2785
Bed #2	285	325	200	445	145				1400	1400	1400	1400	420	1820
Bed #3	270	625	185	605	210	845		390	2840	1995	1995	2385	850	3690
Bed #4	465	325	325	635	220	845		390	2815	1970	1970	2360	845	3660
Bath 1	240	175	160	195		210	455		770	980	1225	770	230	1000
Bath 2				140					140	140	140	140	40	180
Total For Level														13135
¹ Includes an allowance of 1200 Btuh For 4 People														
² House Facing West														
House Total														40080

¹ Includes an allowance of 1200 Btuh For 4 People

² House Facing West

Air Distribution Studies Show What Factors Affect Room Temperature Gradient



When the discharge velocity of supply registers is not enough to carry cool air to the ceiling, a strata of undisturbed air is formed and the thickness of this layer determines the comfort zone

By S. W. Reid

**Air Conditioning Engineer
Gilbert Associates, Inc.**

FROM "RESIDENTIAL AIR CONDITIONING" (a summary report of the Austin Air Conditioned Village project) published by the National Association of Home Builders, we quote:

"Test observation during summer months in Austin showed that temperature variations less than 4 deg between maximum and minimum temperatures measured at the 3 and 60 in. levels above the floor throughout the living area were not noticeable to the occupants."

Observation Forms Basis

This observation from field tests in actual homes is the basis for the second item in the newly developed Standards for Rating Residential Cooling Systems published by American Artisan.

These standards assign a rating of GOOD to an air conditioning

system which is capable of maintaining the 3 to 60 in. level temperature gradient to 4 degrees. Between 4 and 7 degrees a rating of FAIR applies, and a gradient over 7 degrees is called POOR. The findings of the NAHB substantiates earlier findings reported in the ASHRAE Guide.

Design Procedures Differ

Our discussion last month dealt with the first item of the *Standards Card* which rates as GOOD a cooling system that can maintain room temperatures between 76 F and 78 F at design loadings. The meaning of this item is apparent.

Assuming that proper design procedures are used, the method of achieving desired room temperature levels is largely a matter of installing sufficient cooling capacity to balance the load at the chosen conditions. This month, however, the method of achieving the desired temperature gradient is not so apparent because it falls within the rather complex subject of air distribution.

Before getting down to the more practical aspects of our problem, let us consider certain facts. First, we can't do a thing to change the natural tendency of warm air to rise and cool air to fall. Warm air is less dense than cool air. Since a cubic foot of it is lighter than a cubic foot of cooler air, the warm air has a tendency to float on the cooler air. Left undisturbed, the air at the ceiling of a room will always be warmer than the air at the floor.

When Conditions Occur

An interesting recognition of this fact is found in the air conditioning of rooms with extremely high ceilings (as church auditoriums). The cooling load is calculated for only the lower portion of such rooms. Conditioned air is carefully circulated within this portion of the room only, leaving the upper portion filled with undisturbed warm air.

A second fact which we must recognize is that present concepts of air conditioning require that a

"There must always be a portion of the room outside the occupied zone where the cool air can be introduced and mixed with higher temperature room air."

room be cooled by the introduction of air at a temperature which is lower than the desired room temperature. This quantity of air, by absorption of heat which enters the room, becomes heated to room temperature and is thereafter removed to be reconditioned and recirculated.

The point to be understood here is that there must always be a portion of the room outside the occupied zone where the cool air can be introduced and mixed with higher temperature room air. Therefore, we must use care in applying our desired standard for room temperature gradient.

Test Conditions

We are now ready to look into the problem of air distribution to see what factors affect the room temperature gradient. Many studies have been, and are being made at the University of Illinois under the sponsorship of the National Warm Air Heating and Air Conditioning Association to determine these factors. These studies are conducted in research residences under conditions that simulate

actual field conditions.

One series of tests made in 1954 compares room-air conditions produced by perimeter floor diffusers (outlets with deflecting vanes for spreading the air stream) with those produced with registers located high on inside walls.

Another test series in the same residence conducted in 1957 compares room-air conditions produced by ceiling diffusers with those produced by floor registers (outlets with non-deflecting vanes) located near inside walls. Let us consider some of the findings.

For the system using perimeter floor diffusers, it was found that the vertical temperature gradient is influenced by both the outside-inside temperature difference and by diffuser discharge velocity. Fig. 1 shows a plot of temperature variation vs the outdoor-indoor temperature difference for four levels above the floor. Notice that the 1 to 60 in. differential at 15 deg outside-inside difference is about 4 deg so that the job would be rated as GOOD, according to the new *Standards* card.

How diffuser discharge velocity affects the vertical temperature

gradient is illustrated in Fig. 2. The lower curve represents the floor to 60 in. level, and the upper curve represents the floor to 8 ft-2 in. ceiling level. This curve applies only to the floor located perimeter diffuser.

Explanation for Increase

The explanation for the increase of differential with decrease in velocity is that at the lower velocities the issuing stream of cool air did not carry into the upper part of the room. As noted earlier, warm air, if not disturbed, will accumulate in the upper part of a room because of its lighter weight per cubic foot.

For the system using high side-wall registers, the results were substantially the same as indicated in Fig. 1 and were considered satisfactory from the standpoint of the vertical temperature gradient. If the issuing jet of cool air can be kept above the occupied zone until it is well mixed with room air and loses most of its velocity, there will be no trouble with drafts. The latter, however, is a separate problem from the one having to do

Table 1 Room-Air Temperature Differentials in Living Zone (4 to 60 in. Level) at 20 deg Indoor-Outdoor Temperature Difference

Outlet Type	Items	Living Room		S. Bed-room	Bath	N. Bed-room	Dining Room	Kitchen		
Ceiling Diffusers		E	W							
	Air Flow Rate, cfm	147	181	135	38	131	52	127		
	Temp. Diff., in deg	0.3		0.6	-0.2	0.2	-0.1	0.2		
Inside Wall Floor Registers	Avg. Supply Vel., fpm	537		429	90	367	648	706		
	Temp. Diff., in deg	1.1		1.3	3.9	1.7	0.6	1.0		
	Avg. Supply Vel., fpm	376		334	72	298	459	557		
	Temp. Diff., in deg	4.2		2.0	3.8	3.0	2.4	0.7		
Perimeter Floor Diffusers		E	W	S	W	N	W			
	Avg. Supply Vel., fpm	485	475	189	283	110	157	330	398	503
	Temp. Diff., in deg	2.3		4.7	7.2	5.6	2.4	2.0		

with vertical temperature gradients which we are considering.

In the tests reported above, all rooms were on one floor and a single return grille was used. It was located at baseboard level in a central hallway. The central return was practical because of the relatively small size of the job.

Cause of Stratification

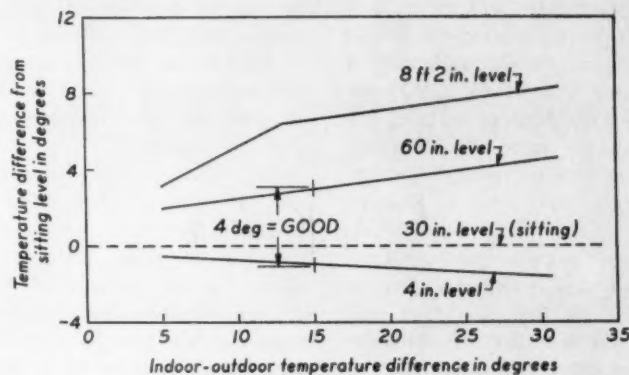
Another point of general interest concerning the test was that all observations that we have just explained were made at times of continuous blower operation. If blower operation had been intermittent, as in a case where a blower and oversized cooling unit were made to cycle together, there would have been a chance for stratification to occur during long "off" periods. With such stratification, one would expect to find greater vertical temperature gradients than in the cases reported. Here, then, is a third factor which is related to our present discussion of how to keep the temperature difference between the 4 and 60 in. levels to 4 degrees or less.

So far we have seen the effect of perimeter floor diffusers and high inside wall registers on room-air vertical temperature gradients. Now let us look at distribution from the ceiling diffusers and from floor registers located near inside walls.

Comparing Results

The floor registers in this case are not to be confused with the floor diffusers used in the previously described test. The registers have non-adjustable blades which allow the air to project straight upward with little or no spread. The diffusers have adjustable blades which tend to spread the issuing stream into a fan-shaped pattern parallel to the wall.

The results of the ceiling and floor register tests are shown in Table I. For comparison, there are also included figures obtained



1 Results of the ceiling and floor register tests show that for a design temperature difference of 15 deg, 4 deg between 4 and 60 in. levels is rated as GOOD

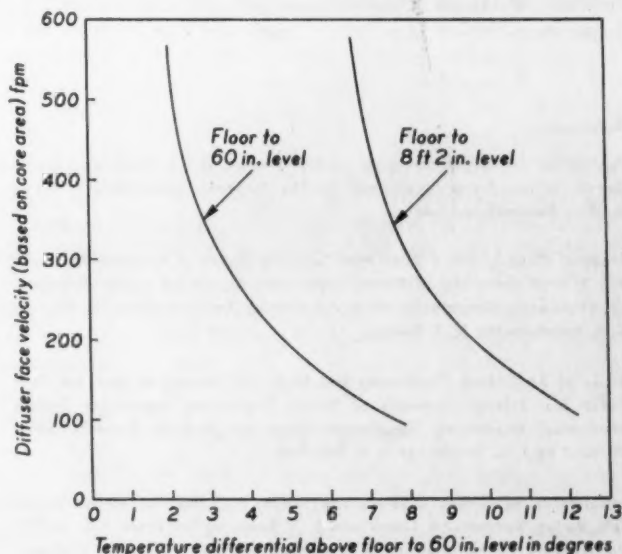
in the test of the floor diffusers described above and upon which Fig. 2 is based.

Comfort Conditions

Notice that in this series of tests that from the standpoint of temperature gradient, the ceiling outlet rates first. Second is the floor register, and third is the floor diffuser. The total air quantity used for the first series of tests (perim-

eter and high sidewall outlets) was 560 cfm, whereas for the ceiling and floor register tests the corresponding quantity was 800 cfm. The greater air quantity would tend to reduce the vertical temperature gradient thus accounting for the results obtained in this series of tests.

Conclusions drawn from the second test series state that ceiling diffusers provide very good comfort conditions with respect not



2 This set of figures is based on the floor diffuser test. Other tests showed that the ceiling outlet rated first, floor register second, and the floor diffuser third

only to creating a minimum of temperature gradient in the 4 to 60 in. zone but also with respect to room-air velocity, uniformity of room-air temperature and room-to-room temperature balance.

Although these diffusers were initially selected on the basis of average throw equal to the distance to the walls, on-the-job adjustments required in some areas a greater, and in other areas a smaller air flow rate than that used for selection. No difficulty was reported with either type of adjustment, indicating that the selections were not critical.

Test Conclusions

With respect to the floor registers, test conclusions state that discharge velocity is the variable which has the most influence upon the vertical room temperature gradient. This substantiates the earlier findings with the floor diffusers. If the velocity is not high enough to carry the cool air to the ceiling, it will fall directly back to the floor, leaving the upper strata of warm air undisturbed and causing localized cool areas.

In Bulletin No. 442 published by University of Illinois Engineering Experiment Station, it is rec-

ommended that the minimum supply velocity should be 500 fpm for cooling with floor diffusers at a 15 deg room-air to supply-air temperature difference. At a 20 deg F difference the recommended velocity is 750 fpm.

For floor registers, somewhat lower velocities are allowable since the non-deflected air stream will travel farther than when it is spread out as is the case with diffusers. Bulletin No. 442 proposes that 500 fpm be the minimum supply velocity for a floor register with a 20 deg room-air to supply-air temperature difference.

From the several actual tests reported above, we can see how necessary it is to get cool air into the upper part of a room if low vertical room temperature gradients are to be achieved. Since cool air will not, by itself, rise and mix with warm air above it, we must take special care to design the distribution system so that proper mixing will take place. This can be done either by introducing the air from the ceiling or near ceiling level or by projecting it from floor level, through proper choice of velocity, into the overhead zone.

Successful distribution of both warm and cool air from the same

outlet requires experience and judgement. The choice of location for the supply outlet is not as important as is an understanding of the problems associated with each location and the proper choice of an air distributor. The following comments can be used as a guide for outlets used for both heating and cooling.

Guide for Locating Outlets

- 1) Floor registers (outside wall location, non-deflecting, straight upward throw) should have a discharge velocity of approximately 500 fpm.
- 2) Floor diffusers (outside wall location, lateral deflecting, fan-shaped upward throw) should have a discharge velocity of approximately 750 fpm.
- 3) Baseboard diffusers (180 degree pattern parallel to outside wall) should have a discharge velocity of approximately 750 fpm.
- 4) Baseboard register (inside wall location) must have adjustable blades which can be set for horizontal blow at 300 to 400 fpm for heating and upward blow at 750 fpm for cooling.
- 5) Wall register (high inside wall location) must have adjustable blades which can be set for slightly downward blow for heating and horizontal or slightly upward blow for cooling. Velocity should be about 500 fpm in either case.
- 6) Ceiling diffusers should have outlet velocities above 600 fpm when used for both heating and cooling.

In cases 1, 2 and 3 which distribute air from the outside wall, the return grille location is optional provided short cycling of the air is avoided. In cases 4, 5 and 6 where distribution is from the inside wall or ceiling, the return grille should be in the outside wall where it can collect cold down drafts before they flow across the floor.

References:

Residential Air Conditioning: A summary report of the Austin Air Conditioned Village Project, published by the National Association of Home Builders Research Institute

Study of Cooling with a Small-Pipe Perimeter System in Research Residence No. 2, 1954. University of Illinois Engineering Experiment Station, Mechanical Engineering Department Warm Air Heating Research Series SC-4A-1 by D. R. Bahnfleth and H. T. Gilkey

Study of Air-Cooled Condensing and Night-Air Cooling in Research Residence No. 2-1955. University of Illinois Engineering Experiment Station, Mechanical Engineering Department Warm Air Heating Research Series SC-4A-2 by J. R. Wright and D. R. Bahnfleth

Performance of Ceiling Diffusers and Inside Wall Non-Spreading Vertical Jets during Summer Air Conditioning in Research Residence No. 2-1957. University of Illinois Engineering Experiment Station, Mechanical Engineering Department Warm Air Heating Research Series SC-5A-1 by J. R. Wright and D. R. Bahnfleth

THE NEED FOR CLEAR-CUT business policies and how they should be used to solve many of the wholesaling problems were described by panelists (l to r, standing) J. Orville Garrett, W. Gene Gwin, Eugene Brown, William W. Morrissey, and (seated) Joe M. David, R. H. Swart and C. B. Buckley



Wholesaler's Position Strengthened By Clear-Cut Policies

Price selling becomes less of a factor in the overall business operation when a wholesaler's staff adheres to a business policy that is made with the customer's best interest in mind.

STRONG BUSINESS POLICIES that are understood and trusted by customers of the wholesaler are the best way of solving many of the problems created by credit extensions, minimum orders, returned merchandise and other practices that contribute to high operating costs. Ways of forming suitable policies were suggested by panelists at the spring convention of the Northamerican Heating & Airconditioning Wholesalers' Association in New Orleans.

Policies should be made with the customer's best interest in mind, and promoted to show that these policies apply to all customers. It's been found that when a wholesaler's staff adheres to fair policies, that price selling becomes less of a factor in the overall business operation, according to the panelists.

Members of the panel were J. Orville Garrett, Lowman-Garrett Supply Co., Greensboro, N. C.,

moderator; C. B. Buckley, Snodgrass & Smith Co., Inc., Denver; R. H. Swart, Heating & Cooling Wholesalers, Inc., Grand Rapids, Mich.; W. Gene Gwin, Mobile Supply Co., Mobile, Ala.; Joe M. David, Lewie David Co., Sullivan, Ill.; Eugene A. Brown, Carolina Heating and Appliance Co., Charlotte, N.C.; and William W. Morrissey, Lau Blower Co., Dayton, Ohio.

Policy Solves Problems

Most of the problems of operating a wholesale business stem from a lack of policy, according to J. Orville Garrett, who compared a business policy with a road map, pointing out that good policies lead management to decisions that are favorable both to the seller and to the customer.

Other panelists pointed out that policies help wholesalers to operate in a business atmosphere where a close margin often prevents the wholesaler from providing all of the services he would like to render both to his suppliers and to his customers.

Forms Basis for Agreement

Policies — clearly stated — make it possible for both parties involved in a purchase where there is not a clear and agreeable point of view, to reach a decision that is fair to the wholesaler and to the other people he does business with.

Policies should be written down and publicly made known so that all people doing business with the wholesaler will know their position in all matters involving a sale or purchase.

The fact that a wholesaler has a set of policies

designed to provide fair treatment for all of the people he comes in contact with is an excellent sales promotion tool according to William W. Morrissey, who said: "Programs of service backed by definite policies are in need of strong selling techniques. When they are properly explained and the customer solidly sold, many of the problems of a controversial sales transaction dissolve."

Wholesaler Performs Service

Another panelist pointed out that problems involved in advertising, stocking, servicing, and other facilities offered by a wholesaler are useful functions. The wholesaler should point out that his company is not a brokerage firm but is, in truth, performing all the functions that are expected of a company engaged in the wholesale business.

Inventory Control Pays Dividends



INVENTORY CONTROL for wholesalers stocking from 5000 to 9000 items was proposed by panelists (l to r, standing) Francis W. Kerscher, W. Everett Welch, Lee J. Haines, and (seated) Ralph B. Bell and George T. Wood

EFFECTIVE CONTROL of inventory is an important and continuing study, according to W. Everett Welch, Minneapolis-Honeywell Regulator Co., who moderated a panel for wholesalers consisting of Lee J. Haines, Souther Steel and Aluminum Co., St. Louis; Francis W. Kerscher, Metal Service Co., Green Bay, Wis.; Ralph B. Bell, Richmond Supply Corp., Richmond, Ind.; and George T. Wood, International Business Machine Co., New Orleans.

This group spelled out the advantages of an up-to-date inventory system, pointing out that: 1) It's valuable as evidence if it becomes necessary to prove amount of stock on hand at the time of a destructive fire; 2) It establishes the amount of stock on hand each day; 3) It prevents duplicate orders, which result in overstocking; 4) It minimizes annual inventory investment.

Additional benefits pointed out by Francis W.

Kerscher are: 1) It provides adequate pricing procedures; 2) It simplifies billing techniques when combined with other business machine operations; 3) Where territories are assigned outside the metropolitan area, it indicates purchasing habits; 4) It indicates the products most often favored by customers; 5) It provides versatility of application to business operation in case of key employee illness or other reasons for absence from the job.

The control of inventory dollars for wholesalers that handle from 5000 to 9000 items is an important benefit of an inventory control system.

Relation of Inventory to Volume

Careful studies have revealed that from 2 to 3 percent of all the items carried in an inventory of this size will account for 50 percent of their annual dollar volume. Further surveys have also shown that the bottom 50 percent of the items in a complete inventory system would represent only 3 to 4 percent of the annual sales volume.

Turnover Determines Investment

Thus, according to W. Everett Welch, an inventory system should revolve around the items representing the greatest number of turnover and the greatest amount of capital invested. He also pointed out that

Advantages of Maintaining An Up-to-Date Inventory System

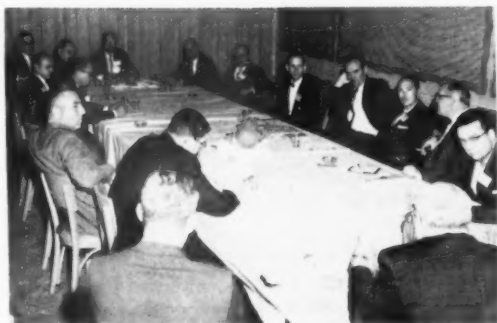
- Valuable as evidence if it's necessary to prove stock on hand, such as in the event of a destructive fire.
- Establishes current inventory.
- Prevents duplicate orders, which result in overstocking.
- Minimizes time spent in taking inventory.
- Provides adequate pricing procedures.
- Simplifies billing techniques.
- Indicates purchasing habits of customers.
- Provides versatility to business operation.

in many cases, no great harm has been done either to the customer or to the wholesaler if no effort is made to preorder many of the items where there is a small annual turnover. Mr. Welch maintained that an up-to-date inventory system is at its greatest value when it prevents back orders on items frequently used by customers.

Action Taken at Committee Meetings



EDUCATION COMMITTEE consisting of (l-r) C. B. Buckley, Ray Crawford, R. J. Woodward and H. L. Godwin, reported progress on a possible correspondence course for wholesalers' employees which would consist of: 1) a basic course in heating; 2) a basic course in cooling; 3) an advance course in both heating and cooling; and 4) an engineering and technical application course in heating and cooling which would enable new employees entering the wholesale heating and air conditioning field to become more useful to customers.



AIR CONDITIONING committee, chairmanned by R. W. Allen, stressed the advantage that refrigeration component manufacturers achieve when they sell their products through the heating and air conditioning wholesaler. Several programs were proposed to show manufacturers of these components how they could better serve the purchasers of air conditioning products where their equipment has been used. These promotion programs will be based upon an intensive investigation into the basic attitudes and business policies of the manufacturers involved.

This committee also discussed to some extent the current five year warranty program and made plans for recommending to manufacturers a more practical warranty that can be handled more effectively by the industry.

Ductwork Tables Establish Fabrication Costs

... when used to estimate weight and time required for complete low velocity air distribution systems

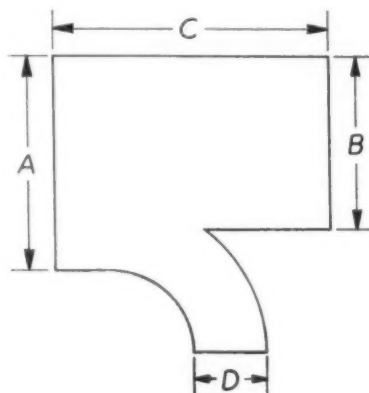
SOMEWHERE IN THE PROCESS of converting any given set of engineering plans into a finished and operating central air conditioning

system, the sheet metal contractor must face the problem of estimating the weight of galvanized sheet metal and the amount of labor

required to fabricate the ductwork ready for hanging. This fabricating cost, added to the cost of labor required for erection,

Reducing Joint With One Branch

Depth of Duct 8 in.



Length of joint C	27 in.	24 in.	21 in.	18 in.	17 in.					
Branch duct D	16 x 8 in.	14 x 8 in.	12 x 8 in.	10 x 8 in.	See reference*					
Dimension B	12 in. less than A	10 in. less than A	8 in. less than A	7 in. less than A	See reference*					
Dimension A	Weight	Time	Weight	Time	Weight	Time	Weight	Time	Weight	Time
44	28.4	80	25.5	80	22.3	80	20.0	80	18.9	80
42	27.5	80	24.7	80	21.6	80	19.5	80	18.4	80
40	26.6	80	23.9	80	20.9	80	18.9	80	17.8	80
38	25.7	80	23.1	80	20.2	80	18.3	80	17.2	80
36	24.8	80	22.3	80	19.5	80	17.7	80	16.6	80
34	23.9	65	21.5	65	18.8	65	17.1	65	16.0	65
32	23.0	65	20.7	65	18.1	65	16.5	65	15.4	65
30	17.2	50	15.4	50	13.5	50	12.2	50	11.5	50
28	16.5	50	14.8	50	12.9	50	11.8	50	11.0	50
26	15.8	50	14.2	50	12.4	50	11.2	50	10.6	50
24	15.1	40	13.6	40	11.9	40	10.8	40	10.1	40
22	14.4	40	13.0	40	11.3	40	10.4	40	9.7	40
20	13.7	35	12.3	40	10.8	40	10.0	40	9.2	40
18	13.0	35	11.7	35	10.3	35	9.5	35	8.8	35
16			11.1	35	9.7	35	9.0	35	8.3	35
14					9.2	35	8.5	35	7.9	35
12							8.1	35	7.4	25
10									7.0	25
9									6.3	25
8									5.8	25
7									5.6	25
6									5.5	25

Weight given in pounds

Time shown in minutes

*Branch duct D size 9 x 8 in. — A less B will be 6 in.
 *Branch duct D size 8 x 8 in. — A less B will be 5 in.
 *Branch duct D size 7 x 8 in. — A less B will be 4 in.

*Branch duct D size 6 x 8 in. — A less B will be 4 in.
 *Branch duct D size 5 x 8 in. — A less B will be 3 in.
 *Branch duct D size 4 x 8 in. — A less B will be 2 in.

represents the net cost of the metal work to which must be added overhead and all other expenses, plus profit, to arrive at the selling price of the metal work connected with the installation.

The tables published on this and following pages are part of a set of ductwork estimating tables that were reviewed and revised in

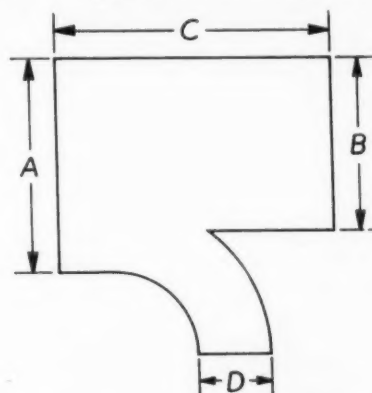
1959 to represent current practices in modern sheet metal shops. The revision was handled by Darwin A. Downing, Head Apprentice Teacher Sheet Metal Apprentice Training School, Detroit. After revision, the tables were reviewed by E. B. Root, now a consulting engineer in Birmingham, Mich. who prepared the original set of

ductwork estimating tables that were published in 1947.

Other tables in this series have been published in 1960 by American Artisan. See April, pages 69 to 73, and May, pages 52 to 54. Additional tables are scheduled for future issues. Upon completion of the series, a sample problem will be worked out.

Reducing Joint With One Branch

Depth of Duct 9 in.



Length of joint C		27 in.		24 in.		21 in.		18 in.		17 in.	
Branch duct D		14 x 9 in.		12 x 9 in.		10 x 9 in.		9 x 9 in.		See reference*	
Dimension B		10 in. less than A		9 in. less than A		7 in. less than A		6 in. less than A		See reference*	
Dimension A	Weight	Time	Weight	Time	Weight	Time	Weight	Time	Weight	Time	
44	29.4	80	26.3	80	23.4	80	20.0	80	19.0	80	
42	28.5	80	25.5	80	22.7	80	19.4	80	18.6	80	
40	27.6	80	24.7	80	22.0	80	18.8	80	18.0	80	
38	26.7	80	23.9	80	21.3	80	18.2	80	17.4	80	
36	25.8	80	23.1	80	20.6	80	17.6	80	16.8	80	
34	24.9	65	22.3	65	19.9	65	17.0	65	16.2	65	
32	24.0	65	21.5	65	19.2	65	16.4	65	15.6	65	
30	17.9	50	16.0	50	14.4	50	12.7	50	11.7	50	
28	17.2	50	15.4	50	13.8	50	12.3	50	11.2	50	
26	16.5	50	14.8	50	13.3	50	11.8	50	11.8	50	
24	15.8	40	14.2	40	12.7	40	11.3	40	11.3	40	
22	15.1	40	13.6	40	12.2	40	10.9	40	10.9	40	
20	14.4	35	12.9	35	11.6	35	10.4	35	10.4	35	
18	13.7	35	12.3	35	11.1	35	9.9	35	10.0	35	
16	13.0	35	11.7	35	10.5	35	9.4	35	9.5	35	
14			11.0	25	10.0	25	8.9	25	9.1	25	
12					9.4	25	8.5	25	8.6	25	
10							8.0	25	8.2	25	
9									7.9	25	
8									7.7	25	
7									7.5	25	
6									7.3	25	

Weight given in pounds

Time shown in minutes

*Branch duct D size 8 x 9 in. — A less B will be 5 in.

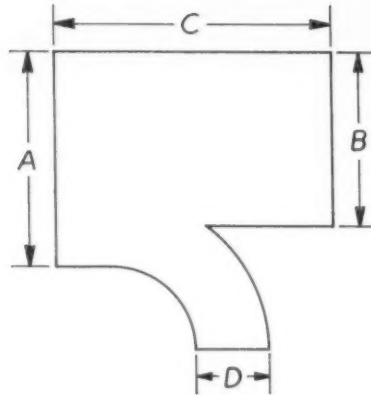
*Branch duct D size 7 x 9 in. — A less B will be 4 in.

*Branch duct D size 5 x 9 in. — A less B will be 3 in.

*Branch duct D size 4 x 9 in. — A less B will be 2 in.

Reducing Joint With One Branch

Depth of Duct 10 in.



Length of joint C	27 in.	24 in.	21 in.	18 in.	17 in.					
Branch duct D	14 x 10 in.	12 x 10 in.	10 x 10 in.	9 x 10 in.	See reference*					
Dimension B	8 in. less than A	7 in. less than A	6 in. less than A	5 in. less than A	See reference*					
Dimension A	Weight	Time	Weight	Time	Weight	Time	Weight	Time	Weight	Time
44	30.0	80	26.1	80	23.2	80	20.2	80	19.0	80
42	29.1	80	25.3	80	22.5	80	19.6	80	18.5	80
40	28.2	80	24.5	80	21.8	80	19.0	80	17.9	80
38	27.3	80	23.7	80	21.1	80	18.4	80	17.3	80
36	26.4	80	22.9	80	20.4	80	17.8	80	16.7	80
34	25.5	65	22.1	65	19.7	65	17.2	65	16.2	65
32	24.6	65	21.3	65	19.0	65	16.6	65	15.6	65
30	17.7	50	15.1	50	14.2	50	12.4	50	11.8	50
28	16.9	50	14.4	50	13.6	50	11.9	50	11.3	50
26	16.2	50	13.7	50	13.0	50	11.5	50	10.9	50
24	15.5	40	13.0	40	12.5	40	11.0	40	10.4	40
22	14.8	40	12.3	40	12.0	40	10.5	40	10.0	40
20	14.0	35	11.6	35	11.5	35	10.0	35	9.6	35
18	13.7	35	10.7	35	10.9	35	9.6	35	9.1	35
16	13.0	35	10.6	35	10.4	35	9.1	35	8.7	35
14			10.0	35	9.9	35	8.7	35	8.2	35
12					9.3	25	8.2	25	7.8	25
10							7.7	25	7.3	25
9	Weight given in pounds								6.9	25
8									6.5	25
7	Time shown in minutes								6.0	25
6									5.6	25

*Branch duct D size 8 x 10 in. — A less B will be 4 in.

*Branch duct D size 7 x 10 in. — A less B will be 4 in.

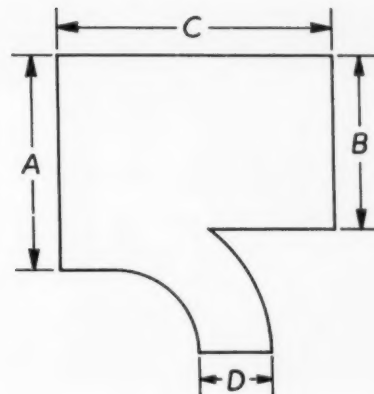
*Branch duct D size 6 x 10 in. — A less B will be 3 in.

*Branch duct D size 5 x 10 in. — A less B will be 2 in.

*Branch duct D size 4 x 10 in. — A less B will be 2 in.

Reducing Joint With One Branch

Depth of Duct 12 in.



Length of joint C		27 in.		24 in.		21 in.		18 in.		17 in.	
Branch duct D 10 x 12 in.		9 x 12 in.		8 x 12 in.		7 x 12 in.		See reference*			
Dimension B		6 in. less than A		5 in. less than A		4 in. less than A		4 in. less than A		See reference*	
Dimension A	Weight	Time	Weight	Time	Weight	Time	Weight	Time	Weight	Time	
44	30.6	80	27.8	80	24.4	90	21.6	80	20.3	80	
42	29.7	80	27.0	80	23.7	90	21.0	80	19.7	80	
40	28.8	80	26.2	80	23.0	90	20.4	80	19.1	80	
38	27.9	80	25.4	80	22.3	90	19.8	80	18.5	80	
36	27.0	80	24.6	80	21.6	90	19.2	80	17.9	80	
34	26.1	65	23.8	65	20.9	75	18.6	65	17.3	65	
32	25.2	65	23.0	65	20.2	75	18.0	65	16.7	65	
30	19.1	50	17.1	50	15.6	60	13.5	50	12.7	50	
28	18.4	50	16.5	50	15.1	60	13.0	50	12.2	50	
26	17.7	50	15.9	50	14.5	60	12.5	50	11.7	50	
24	17.0	40	15.3	40	14.0	45	12.0	40	11.3	40	
22	16.3	40	14.6	40	13.4	45	11.6	40	10.8	40	
20	15.6	35	14.0	35	12.9	45	11.1	35	10.3	35	
18	14.9	35	13.4	35	12.3	45	10.7	35	9.8	35	
16	14.2	35	12.8	35	11.8	45	10.3	35	9.4	35	
14	13.5	25	12.2	25	11.2	30	9.8	25	8.9	25	
12	12.8	25	11.5	25	10.7	30	9.4	25	8.4	25	
10			10.9	25	10.1	30	9.0	25	7.8	25	
9	Weight given in pounds				9.9	30	8.8	25	7.3	25	
8							8.3	25	6.9	25	
7	Time shown in minutes								6.5	25	

*Branch duct D size 6 x 12 in. — A less B will be 3 in.

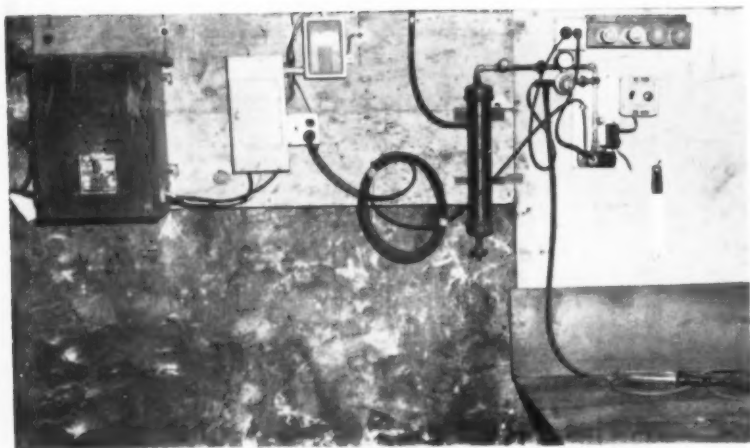
*Branch duct D size 5 x 12 in. — A less B will be 2 in.

Save These Pages

Each month additional pages will be published and upon completion of the entire set of 27 tables a sample problem will be worked out in detail.



◀ SHEET PLASTIC MATERIAL is cut to size in power shear



◀ EQUIPMENT AND ARRANGEMENT for plastic welding includes heavy duty transformer at right, moisture and scale trap [vertical cylinder at center], resistance heaters, warning light, pressure regulator and line gage. Lower right is the high temperature testing thermometer, air hose and welding gun



◀ DUCT SECTION is welded after it's tacked into position. At left, David M. Todd watches H. H. Kramer complete the weld

How to Fabricate Plastic Duct Systems

Welding and shaping techniques help cut overall job costs

FABRICATING SHEET PLASTIC materials for duct systems has become a specialty item at Gieske Sheet Metal Co., Kansas City, since the firm found it could adopt the skills and experience of a sheet metal journeyman to the tools used for plastic work. By using sheet plastic for duct systems located in corrosive atmospheres, the firm is able to extend the life of ventilating system components. Within a few years the reduction in maintenance costs will more than compensate for the higher costs.

David M. Todd, who heads the shop and installation department, and sheet metal journeyman H. H. Kramer have worked to improve the plastic fabricating techniques as outlined by the manufacturer.

In many cases, the fabricating and installation costs were reduced to about one-half of the cost that would have occurred if the manufacturer's fabricating techniques were followed.

Equipment Purchased

In setting up his plastic fabricating department, Mr. Todd purchased and installed the following equipment: one single-phase, heavy duty transformer (to provide an even flow of current to the electrical heating element located in

the welding gun); an air pressure regulating valve; air pressure gage; a scale and moisture trap with drain valve; a pneumatically operated warning light; four electric resistance coils; a high temperature testing thermometer (720 F); welding gun and assorted tips; and 15 ft of flexible hose.

After this equipment had been installed and adjusted according to the manufacturer's recommendations, a 4 × 12 ft work bench with an angle iron frame and 1½ in. plywood top was made and securely fastened to the building wall. The plywood top was covered with 12 ga sheet steel material. This steel cover extended up the back wall for 12 in., and at the outer edge it was turned down at 90 deg for 2 in.

Welding Gun Modifications

Previous experience in welding plastic sections indicated that this type of work called for lower air velocities than those recommended by the welding gun manufacturer. Also, modifications were made in the welding gun tip to give better heat distribution at the welded joint. These modifications were made possible by the skill of the mechanic performing the welding operation.



RECENTLY INSTALLED 8 ft high plastic hood is checked by visitor Ralph Nicholas, Kansas City association secretary; David M. Todd; and Tom Cross, Western Electric Co.

Duct sections are fabricated in the following manner: A sheet of plastic material is cut to the required size in the power shear. The size of this sheet depends upon the duct size. Generally, the ducts are fabricated by making two 90 deg bends in the sheet with the power brake and welding a flat fourth side.

Special Dies in Power Brake

Even during summer months, when the air temperature is between 80 and 90 F, the duct sections can be safely formed in the power brake without changing the thickness or molecular construction of the plastic material at the point where the 90 deg bend occurs. Special dies placed in the power brake are used for this operation.

When both 90 deg bends have been made, the three sided duct is taken to the welding location



BRACKETS AND BRACES
are attached directly to
flat side of a duct section
by welding

WELDING TEMPERATURE
is checked and adjusted
with the aid of a testing
thermometer prior to be-
ginning welding operations



where the fourth side (a flat sheet the width and length of the duct) is tacked into position with a welding gun.

Once the duct is formed, the welding operation is completed by starting at one end of the joint and evenly moving the welding gun down the seam toward its termination point. The plastic welding rod used with the gun is fed through a groove in the welding gun tip. Welds thus made are airtight and have been proven to

be just as strong as the material itself.

Pre-Welding Preparation

Prior to the actual welding operation, the electric current and air pressure is turned on. The moisture and scale trap is drained and the air pressure adjusted for four pounds at the welding gun. Before starting, a high temperature thermometer is used to adjust the welding gun for the correct

discharge air temperature. Temperature used for $\frac{1}{8}$ in. plastic material is between 425 and 475 F and the temperature for $\frac{5}{16}$ in. material is between 475 and 525 F.

The tip temperature of the welding gun is obtained by adjusting the electrical output with resistance elements. Once the air pressure and temperature have been adjusted, they will remain constant throughout the welding operation. Before welding, a steel

SPECIAL DIES adjusted for proper clearance make it practical to bend sheet plastic material in power brake



LIP FOR PLASTIC TANK COVER is formed with a hand gun, from which heated air is discharged along the bend line

brush is used to clean the gun tip to remove all particles of welding rod from the previous operation or from tacking.

The only attention given to the equipment supplying the air for the welding gun is to drain the moisture and scale trap about every two hours.

Handling Special Orders

Quick clamps are used when welding small rectangular duct

sections or other plastic shapes. These clamps secure the material to the work table.

Special braces are often welded to duct sections for additional support. These braces are usually attached prior to the completion of the duct. The brace is attached to the plastic sheet at right angles after having been shaped in the shear. A metal square is usually used to set the brace at a true 90 deg angle. The brace is then tacked into position before the

weld is made. In this operation, both sides of the brace are welded to the duct side.

Some Bends Formed Manually

In plastic fabrication, it is sometimes advisable to perform gradual bends in a flat sheet. Such as forming a lip for a plastic lined tank. This is accomplished by heating the plastic material with a hand gun (similar in shape and appearance to a manual hair

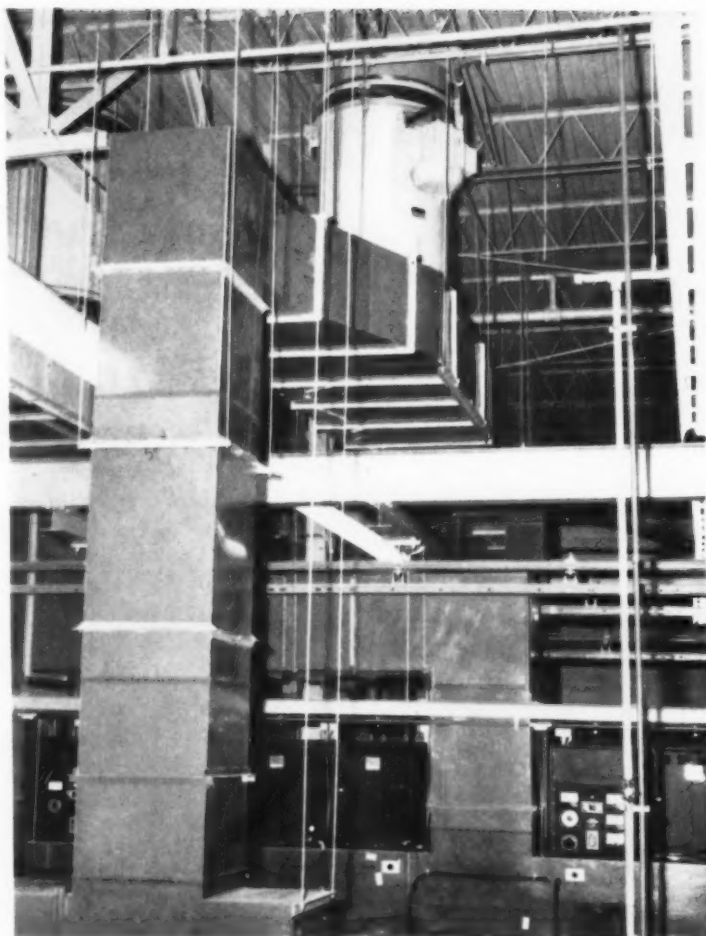
Sheet plastic for ducts prolongs the life of the ventilating system

dryer) along a line where the bend is needed. When the plastic material becomes pliable, it is manually bent around an oval die.

Job Called for Plastic Ducts

Gieske Sheet Metal Co. recently completed an installation in the metal plating and cleaning room of the Western Electric Co.'s new plant in Grandview, Mo. This room utilizes quantities of nitric, hydrochloric, and sulphuric acids for silver, gold, copper, nickel and tin plating. Each plating and cleaning operation is adjacent to a plastic hood that is connected to a plastic duct system. These ducts were sized to handle the air velocity required for individual plating and cleaning baths.

Plastic ducts terminate at a plastic lined exhaust fan which discharges through the roof at a velocity sufficient to disseminate the concentrations before they can come in contact with metal portions of the building.



ONE OF THE NUMEROUS plastic duct systems used in the manufacturer's metal plating and cleaning room. Note at the top of the picture the plastic blower that discharges air through the roof of the building



MOST PLASTIC HOODS WERE CONSTRUCTED to provide adjustable intake openings so the attendant can adjust the air flow required for the quantity of fumes created by the particular operation



HIGH AIR VELOCITY at hood intake slot is demonstrated with a sheet of paper by David M. Todd (right) to his son, David E. Todd, who worked on the installation of the plastic duct system



Because each industrial heating job has to be tailored to existing conditions, the experienced dealer-contractor knows there is no simple rule he can substitute for good judgement and common sense when selecting and locating the number of direct-fired units to be used

Design Direct-Fired Heater System So It Opposes Sources of Cold Air

**By L. W. Sutherland
Manager, Product Planning & Engineering
Janitrol Heating & Air Conditioning Div.
Midland-Ross Corp.**

To OMIT careful analysis of probable heat gains or loss, as we pointed out in the May issue of *American Artisan*, is to fail in your responsibility to the customer to size equipment for minimum installation cost, and maximum operating satisfaction. The next step that contributes towards greater customer satisfaction is to locate the equipment so it provides maximum comfort.

It is common practice, where possible, to locate equipment (whether suspended or floor mounted) so that warmed air can be discharged and circulated parallel to the exposed areas in order to diffuse the cold air at one of its major sources (Fig. 1).

In other cases, the units are located more towards the center of a building beneath areas where cold air could be drifting downward from roof monitors con-

taining large glass areas and facilities for natural ventilation (skylights, monitors, etc), and positioned to direct warmed air toward the outside walls. (Fig. 2).

The practice of circulating air parallel to the outside walls has proved to be most effective in maintaining warm floors and freedom from drafts.

Selecting units for best heat distribution varies with the dimensions of the space.

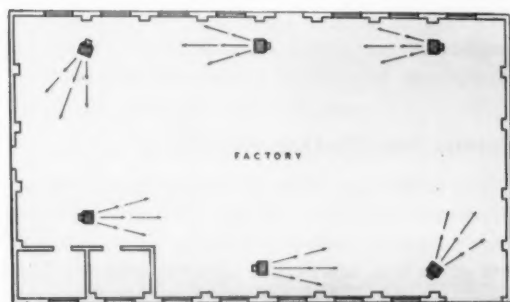
In buildings where the width does not exceed the length of effective heating area of the unit of the size selected, all units can be located along the perimeter in a pattern similar to Fig. 1.

Very wide buildings (300 ft or over) or those having substantial losses in the inside areas need to be treated differently. Usually, the number of units at the perimeter should have a total capacity representing wall glass area loss, plus outside wall area loss, plus edge loss of the floor, plus approximately one-third of the loss through ceiling, and two-thirds of the infiltration loss if there are no monitor (skylights, monitors, etc.) glass areas.

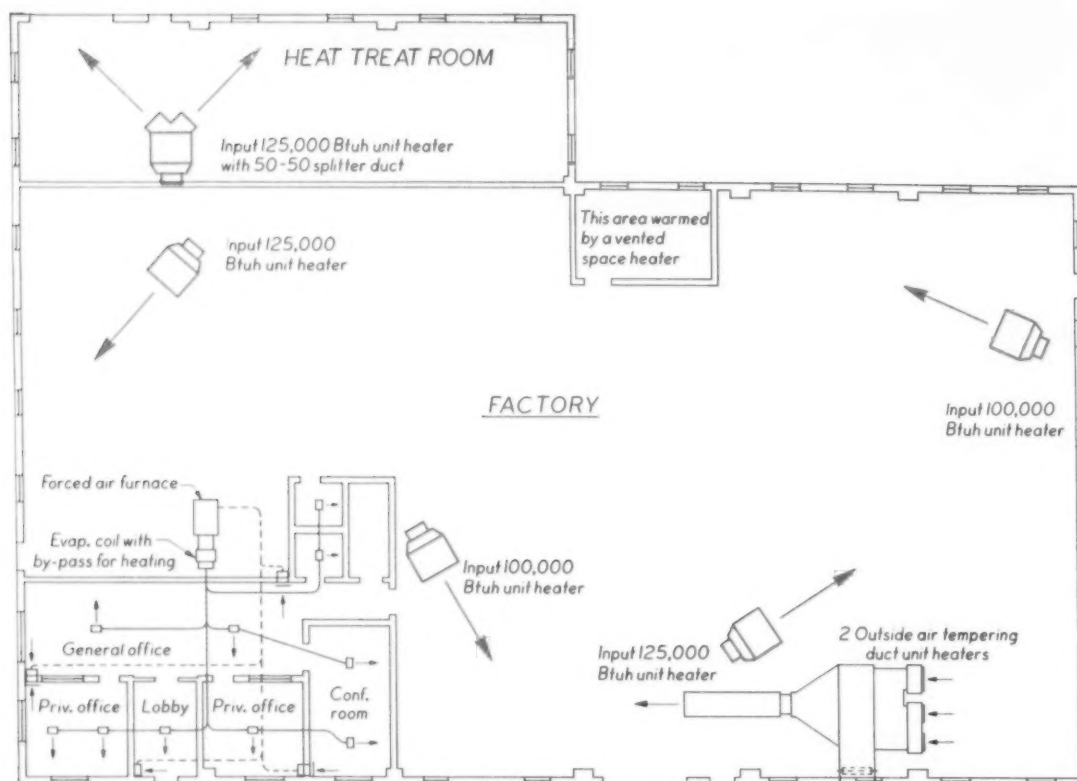
Units located in the interior areas would have a total capacity to offset total loss calculated for walls and glass areas that form the monitor. Calculations should include two-thirds of the ceiling loss, one-third of the infiltration heat loss due to wall glass and door areas, and all of the infiltration heat loss through the monitors.

Direct-fired unit heaters may be located high in a building; sometimes this is necessary to avoid cranes. In this case, blower units with high velocity nozzles are used to direct the heated air downward to mushroom out along the floor.

It is not uncommon to locate blower units as high as 28 to 30 ft above the floor since centrifugal blowers can be powered and adjusted to deliver air at the necessary volume and velocity to reach the floor.



1 Locate direct-fired unit heater equipment so that warmed air can be discharged and circulated parallel to the exposed areas in order to temper the cold air at its major source of infiltration



2 Units are located more towards the center of a building because areas where cold air could be drifting downward from roof monitors containing large glass areas, and positioned to direct warmed air to outside walls

There are situations in which cold air is intermittently admitted through large door openings. In such cases, the use of direct-fired units located to discharge warm air across the opening to break up the cold air has proved most effective.

"Air Door" Hinders Infiltration

If building constructions require a high location, the best practice is to equip the unit heater with a high velocity nozzle to discharge the air downward. Heated air has a tendency to throw outward away from a nozzle outlet so directed. Therefore, the unit should face the wall so that the warmed air will deflect against this surface and follow it downward across the opening to the floor (Fig. 3).

In other cases, a propeller unit may be located either facing the door opening or at the side to discharge air across the opening. Units applied in this way are often controlled by an auxiliary switch actuated by the door to insure their operation when the door is open.

General recognition of this principle is illustrated by the modern "air door" seen commonly in department stores or supermarkets. These doors are wide open but are covered by an invisible curtain of high

velocity warm air that breaks up the cold air.

If there is any industrial processing equipment in the area which is giving off heat in its vicinity, such heat can be effectively captured and distributed if unit heaters are located in such a way as to pick up the heated air and discharge it into the unit's air stream. The heater must be located so that controls or motor equipment cannot be damaged by heat given off from the processing equipment.

In large areas with very low heat loss, better heating will be accomplished by installing two or more smaller heaters instead of one larger unit of equivalent capacity because better heat distribution, more continuous air circulation, and better temperature control can be achieved with the multiple units.

Factors that Affect Length of Throw

The satisfactory height of locating propeller direct-fired units varies considerably with the size of the unit. Length of throw of a unit depends upon a number of factors, namely, the distance from the floor, type of outlet and louvers used, the adjustment of louvers, volume of air handled, air velocity at the unit outlet, air outlet temperature, and room temperature.

The American Society of Heating, Refrigerating and Air-Conditioning Engineers Guide provides a formula for calculating the length of air throw. It is not too difficult to calculate the length of horizontal level throw of unheated room temperature air. But it is extremely difficult for other than the most experienced engineer to make the necessary accurate evaluations of the several factors which affect the throw of heated air discharged with downward deflection.

"Effective Heating Area" More Realistic

Experienced unit heater installers consider the "effective heating area" of a unit heater rather than "length of throw" as being more realistic and a better guide. This "effective heating area" includes some distance behind the unit which is heated by the returning air, plus additional distance beyond the perceptible air throw, as the more true area that the unit will heat, rather than using entirely theoretical calculations.

Where test results are not available, it is quite common to calculate the values for length of throw, and then use some factor such as 65 to 75 percent of the calculated distance as being a more realistic estimate for "effective heating area."

The American Society of Heating, Refrigerating and Air-Conditioning Engineers is currently considering a project to encompass tests of unit heaters of various sizes, air deliveries, etc., with the objective to develop revised and more workable calculations for general use.

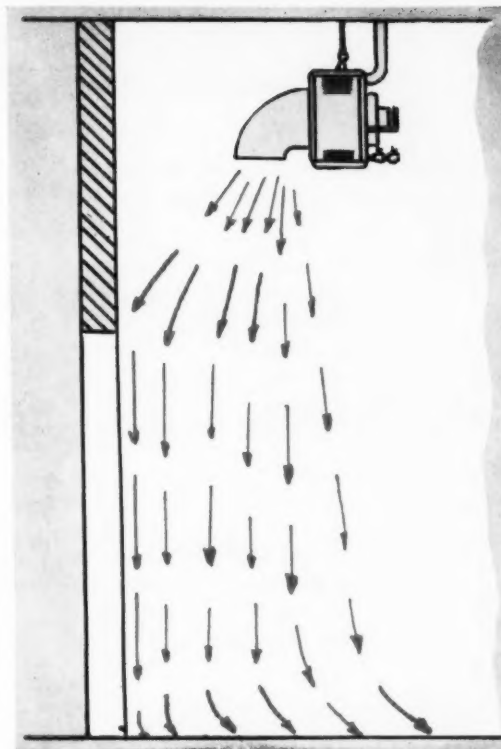
Obviously, with the myriad of potential combinations of air velocity, volume, temperature, etc., possible with belt driven blower unit heaters, it becomes practically impossible for any manufacturer to conduct enough tests to provide cataloged data on the basis of test performance for every condition.

However, direct connected propeller units are subject to test by the manufacturer because of their predictable air delivery and heated air temperature rise. Selection tables will show effective heating area based on adjustment of louvers at 45 deg and maximum height above floor.

Height Determines Heating Area

The higher a unit is located, the shorter will be the effective heating area in front of the unit. In addition to being influenced by this factor, the length of throw of a unit heater is influenced by the proximity of side walls and the ceiling height.

Experience has indicated that the nearer the configuration of a room simulates a duct, the longer will be the length of throw. On the other hand, obstructions such as ceiling cross beams which could create



3 High velocity nozzles can be used to form a curtain of warm air over openings that admit large quantities of cold air or have heavy heat losses. The nozzles should be adjusted to deflect the warmed air against the wall

turbulence at the top edge of the air stream, machinery, other obstructions, or appreciable cross drafts on the floor tend to reduce the effective heating area or length of throw.

Experience Provides Solution

From the examples you can see that there are no simple rules which can be substituted for good judgment and common sense when selecting the number of units to use and their location.

Many manufacturers' tables make it possible to predict the effective heating area, but the width of the heated area requires a solution. Again, experience has indicated that in an obstructed open space, the warm air will diffuse sideways so that the effective heating area length can be considered as the diameter of a roughly circular heated space.

To illustrate, if the total effective heating area length of a particular unit is 50 ft, we would expect the heat to diffuse to a total width of 50 ft or to a distance of approximately 25 ft to right and left of the center of the main air stream. This does not mean that it would be good practice to install units as far out as 25 ft from a wall.

Perimeter circulating units are generally located

Series Index

The subjects treated in this series on direct-fired heating equipment in industrial plants are:

- Application** A breakdown of the various types of direct-fired unit heaters that are available and how they are equipped to meet practically any industrial plant heating requirement
- Selection** Points out what items to consider when calculating the heat loss or heat gain so the job can be sized extremely close in order to give the customer better service in terms of greater comfort and lower original investment
- Installation** Shows why experienced unit heater installers consider the "effective heating area" of a unit rather than "length of throw" as more realistic and a better guide when locating heat distribution equipment that has the proper air distribution accessories
- Environment, Life Expectancy, & Fuel Data** Several steps are given on how to reduce corrosive action and thereby prolong the life of the unit, and explains ways direct-fired unit heater equipment can be applied to meet the requirements of a dual fuel supply with good results
- Economics & Sales Features** Explains the merits of an LPG-air system as compared to the straight direct fuel system in terms of job size, physical arrangement of the heating equipment, amount of piping required, and provides guides to estimate fuel consumption

within 6 to 10 ft of a wall in order to concentrate warm air along the building's cold perimeter and to more positively diffuse cold drafts with warm air at the points where it enters the building.

Two or more propeller units that have a combined capacity equal to one large unit often provide a most effective answer to good coverage of a large area. Another possibility is to use a blower unit with an air distribution duct having several outlet openings.

Accessories Assure Satisfaction

The proper use of air distribution accessories will insure customer satisfaction. We have already discussed the use of a 90 deg high velocity nozzle to direct the air into a working zone when the unit must be located at considerable distances above the floor. Probably the most frequently used accessories are additional vertical louvers.

Horizontal louvers are always necessary to provide adjustment of air direction in a vertical plane, while the vertical louvers provide control of distribution to right or left, in the horizontal plane. No one actively at work, or otherwise is comfortable in a perceptible draft of air, be it warm or cool.

Combination louvers provide a simple and effective means of adjusting the warm air diffusion. It can widen or narrow the heated area of each individual unit to give that high degree of comfort of which the equipment is capable.

Splitter type outlet nozzles are often used to break the outlet air into two definite air streams and direct it at specific points. Each outlet has louvers to control the vertical deflection of the air as desired.

A return air duct from the unit down to a point 12 to 18 in. above the floor has proved exceptionally effective in keeping floor air temperatures up and at the same time keep ceiling temperatures at a minimum.

Individual Thermostats Assure Comfort

The thermostat is a necessary accessory. It is desirable that each unit be controlled by its own thermostat because this insures not only the best comfort, but best operating economy resulting from diversified unit operation. The thermostat must not be located in the warm air stream of any unit. It should be in a representative area to reflect the temperature requirements in the area heated by the unit or units which it controls.

Various ways direct-fired unit heaters can be applied to meet the requirements of a dual fuel supply system, and ways to reduce premature damage caused by solvents will be covered in our next article. Discussion of thermally equivalent LPG-air mixture, that is, one which will provide an orificed heat input equal to that of the base natural gas will also be explained.

HUGH REID'S SHEET METAL PATTERN

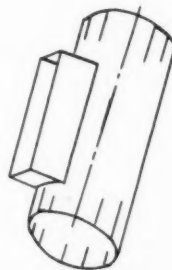
How to Develop:

A Rectangular Duct Intersection With a Round Pipe at 90 Deg Angle

This sheet metal fitting will be made by virtually everyone in the trade—and here's a simplified method of laying it out

Can you develop this pattern in 15 minutes?

Here's a new and accurate approach to the development of sheet metal patterns that will cut costly layout time. The method applied to this month's fitting can be used as a guide to develop related patterns and solve other problems encountered at the layout bench



THIS MONTH'S pattern problem is commonly used on perimeter heating systems and is used for a take-off to the floor register.

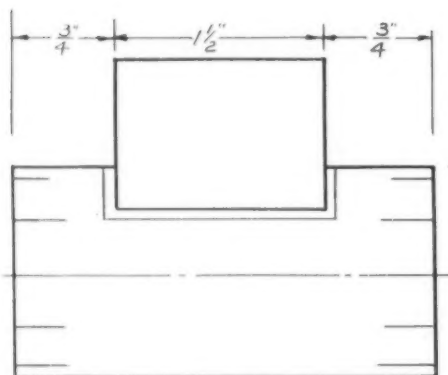
In studying the pattern problem to determine the practical simplified method of solution, it will be noted that the fitting is symmetrical about both a horizontal and a vertical center line. It will be necessary to develop the true length of the line marked

"B" (Fig. 3) before the patterns can be laid out.

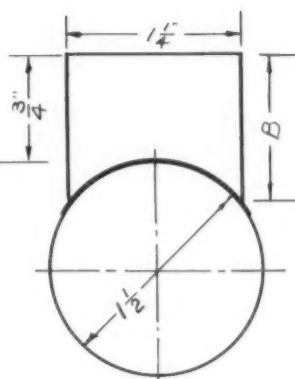
From this analysis it is known that the pattern can be developed from the quarter end view simplified method drawing as shown on Fig. 3.

By following the method as illustrated on the drawings and the procedure as outlined here, the time required for the pattern layout should not exceed 15 minutes.

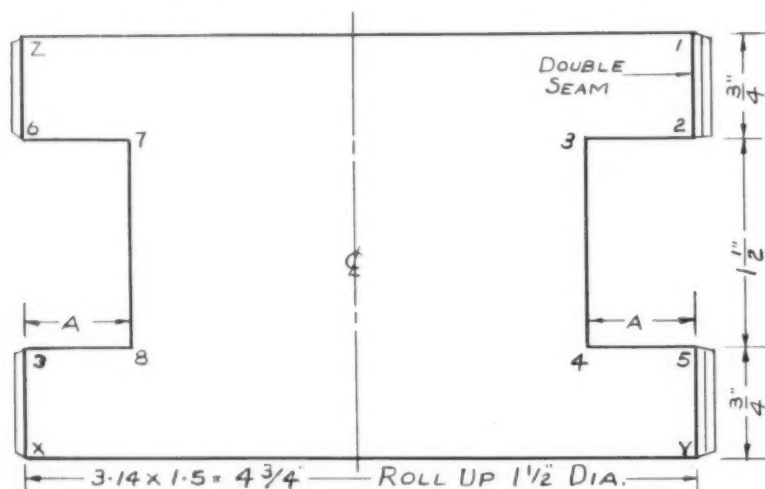
NOTE: THESE PATTERN dimensions should be multiplied by the predetermined ratio figure to produce the actual size of the fitting needed



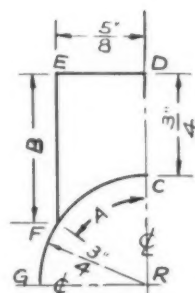
1 Front View



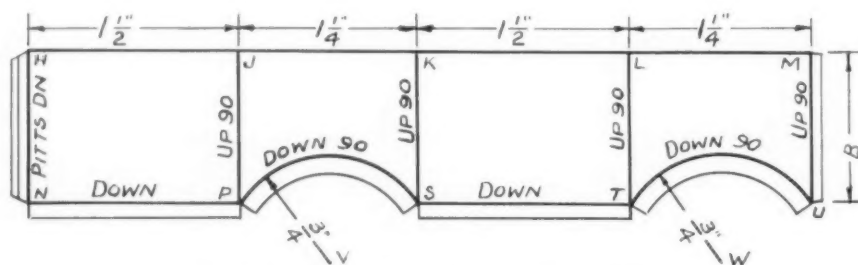
2 End



5 Pattern For Round Duct With Opening



3 Quarter End View Simplified Method



4 Rectangular Intersection Duct Pattern

Given the front view and the end view of a rectangular duct takeoff from a round main duct, the following is the step by step procedure of the pattern problem solution.

Quarter End View Simplified Drawing, Fig 3—

To construct the quarter end view simplified drawing:

a) Draw a horizontal and a vertical center line and mark the intersection as point R. From point R measure $\frac{3}{4}$ in. up the vertical center line to locate point C. Measure $\frac{3}{4}$ in. above point C to locate point D.

b) With point R as center and radius R-C, draw a 90 deg arc to the left to intersect the horizontal center line. Mark the intersection as point G. Draw a line from point D to the left and perpendicular to line R-D. Measure $\frac{5}{8}$ in. to the left of point D and locate point E. From point E draw a line below and perpendicular to line E-D to intersect the quarter circle. Mark the intersection as point F.

c) Mark the arc length F-C as length A.

Intersection Duct Pattern, Fig. 4—

To layout the rectangular intersection duct pattern:

a) Draw a horizontal line and mark the left extremity as point H. Working from Fig. 1 and 2, transfer the following dimensions in the order listed here, using point H as the starting point and working toward the right. Intersecting duct length $1\frac{1}{2}$ in. (Fig. 1) intersection duct width $1\frac{1}{4}$ in. (Fig. 2) intersection duct length $1\frac{1}{2}$ in. (Fig. 1) and intersection duct width $1\frac{1}{4}$ in. (Fig. 2). Mark the points located as H, J, K, L and M. From points H, J, K, L and M, draw lines downward and perpendicular to line H-M.

b) Working from the simplified drawing, (Fig.

3) transfer length B to vertical lines below points H, J, K, L and M (Fig. 5). Mark the located points as N, P, S, T and U. Draw lines connecting points N-P and S-T. Set a compass at the given $\frac{3}{4}$ in. radius (Fig. 2) and with points P and S as centers, draw arcs below the points to intersect. Mark the intersection as point V. With point V as center and with a radius of $\frac{3}{4}$ in., draw an arc to intersect points P and S.

c) With points T and U as center and radius $\frac{3}{4}$ in., draw arcs below the points to intersect. Mark the intersection as point W. With point W as center and radius $\frac{3}{4}$ in., draw an arc to intersect points T and U.

Round Duct Pattern, Fig. 5—

In laying out the round duct pattern:

a) Calculate the circumference of the round duct by multiplying the given $1\frac{1}{2}$ in. diameter (Fig. 2) by the constant 3.14 which equals $4\frac{3}{4}$ in.

b) Draw a horizontal line and mark the left extremity as point X. From this point measure $4\frac{3}{4}$ in. to the right and mark the point as Y. From points X and Y draw lines above and perpendicular to line X-Y. Measure the given sum of the fitting perpendicular to line X-Y. Measure the given sum of the fitting length ($\frac{3}{4}$, $1\frac{1}{2}$ and $\frac{3}{4}$ in.) 3 in. on both lines. Mark these points as Z and 1. Draw line Z-1.

c) From points X and Y measure up the vertical lines $\frac{3}{4}$ in. to locate points 9 and 5. Above points 9 and 5 measure $1\frac{1}{2}$ in. to locate points 6 and 2. Above points 6 and 2 draw the $\frac{3}{4}$ in. line to points Z and 1. From the points 2, 5, 6 and 9 draw lines parallel to line X-Y. Working from Fig. 3, transfer arc length A to the left of point 5 and point 2, and to the right of points 6 and 9 draw the vertical lines 3-4 and 7-8.

Add allowances for seams and joints and mark the patterns for fabrication.

Polyethylene Coating Resists Corrosion

TWO MORE DEVELOPMENTS in the never-ending battle against corrosion, according to American Agile, Bedford, Ohio, now make it possible to literally spray corrosion away by applying a fluidizing coating process with a redesigned spray gun.

The finely divided polyethylene powder is blended with moisture resistant elements to prevent balling or lumping. It also increases free flow, adhesion, and produces a smooth, level coating, according to the manufacturer.

A specially designed compressed air distribution system maintains the powder in a turbulent, dense fluid state which gives the appearance of boiling liquid although the powder is at room temperature.

In this state, a preheated unit to be coated can be dipped into the "fluid" powder and receive a $\frac{3}{16}$ in. coating.

The fluidized powder can be drawn through the spray gun and directed at a target that cannot be dipped. The spray gun is designed so the operator can use his thumb to open air valves which cut off the flow of polyethylene and produce a flame that will preheat the surface to be coated.

By using the spray gun, the fluidized powder can be applied to ductwork, ventilator section of a large exhaust system, and duct transitions and fan housings.



AT THE CONCLUSION of the entertainment portion of the program, guests sought out Mr. Rynbrand to thank him for a pleasant evening. Flowers held by the guest are similar to those that appeared on each table

Dealer-Contractor Holds Party To Show Appreciation for Business

Personalized treatment is an effective way to build and hold customer goodwill. By giving a "thank you" party for his regular customers, this dealer-contractor was able to express his appreciation to each of his 250 guests, and establish closer ties for future business

How DO YOU SHOW your regular customers that you appreciate their business? Glen Rynbrand, Glen W. Rynbrand Co., Kalamazoo, Mich., solved this problem last December by inviting 250 of his regular customers to a Christmas party. The guest list included home builders, architects, consulting engineers, utility company people, his employees, and all the wives.

The party was scheduled nine days before Christmas on a Wednesday evening at 6:30 p.m. As guests

began to arrive, employees and their wives acted as hosts and introduced them to other guests. Dinner was served at 7:00 p.m., and by 8:00 p.m. the tables had been cleared.

Set Party Mood

To set the mood for the Christmas party, several popular carols were mimeographed and laid at each



THIRTY-YEAR FRIENDSHIP between Harry A. Hurni (left), one of Kalamazoo's leading builders, and Glen Rynbrand is cemented in the congratulations extended Mr. Rynbrand, who has handled the heating and sheet metal work on every house erected by Mr. Hurni during this period



WINNERS of fruit baskets claim them from Garret J. Moerdyk, who was a member of the decorating committee. Flower centerpieces and fruit baskets were awarded by using numbered stubs that were placed under each dinner plate, and a selection of certain numbers by a disinterested party

dinner place. After the initial welcome, an employee's wife played the piano and the group joined in singing.

Brief Introduction

After welcoming the guests as a group, Glen Rynbrand and his wife showed colored slides of their recent trip around the world. Mrs. Rynbrand operated the slide projector while her husband commented on the points of interest in each picture. Christmas presents were given to some of the guests, and the affair concluded at 9:30 p.m.

Committees Organize Party

The work involved in organizing and handling the details for a party of this size were numerous. Mr. Rynbrand divided his employees into committees

as is normally done by associations. He formed committees for reception, decorating, arrangements, entertainment, and Christmas presents. Each group was responsible for the work falling under its jurisdiction. Committee membership included not only the employees but their wives as well.

Plan with Guests in Mind

Mr. and Mrs. Rynbrand were the entertainment committee. They selected the pictures of primary interest to those in attendance and arranged them in an interesting and logical order.

The arrangements committee located the facilities suitable for handling a large group for dinner, and arranged for the dinner menu and seating arrangements. This group decided to seat eight people at a table, and provide a flower centerpiece for each of the tables.



PREPARING TO SHOW the slide films and narrate points of interest about buildings, method of construction, and craftsmanship are Mr. and Mrs. Glen Rynbrand. Various types of heating methods used by natives of different countries were also shown

Besides handling arrangements for the dinner, this committee was also responsible for compiling the invitation list and mailing out the formal announcement. The announcement was made on $4\frac{1}{4} \times 5\frac{1}{2}$ in. white embossed cards, similar to those used for weddings and similar events. In the lower left hand corner was the R.S.V.P. to enable the committee to adequately provide for the proper number of guests.

Establish Friendly Atmosphere

Trimming the Christmas tree and decorating six portable folding partitions with Christmas ornaments and designs was the responsibility of the decorating committee.

The reception committee arranged to meet the guests as they arrived, and to handle the checking facilities for the guests' coats and hats. Members of the committee also introduced the visitors to one another.

Award Attractive Gifts

Eight large baskets of fruit were to be presented to guests selected at random by the Christmas presentation committee.

Flower centerpieces and fruit baskets were awarded to guests by using numbered stubs that were provided under each dinner plate and through the selection of certain numbers by a disinterested party.

Some member of the group at each table was awarded the flower centerpiece, and those having certain combinations of numbers were awarded the fruit baskets.

Provide Interesting Entertainment

The entertainment, consisting of narrated slide photographs of interesting places throughout the world, was based on the specific interest of the group. Interesting buildings, their method of construction, and some of the craftsmanship required were pointed out and explained by Mr. Rynbrand.

One of the themes throughout the series of pictures shown was the various types of heating methods used by natives of different countries. Builders and architects found the photographs of native house construction of interest. Mr. Rynbrand also had visited sheet metal shops in different countries and elaborated upon their various methods of fabrication.

Follow Through on Party Theme

Near the conclusion of the entertainment, photographs of Palestinian points of interest were shown, and their relationship to the Christmas season and



LADIES of the decorating committee show some of the ornaments hung on folding partitions to decorate the dining hall. From left are Mrs. Glen Rynbrand, James Hoyt, Garret J. Moerdyk and Garrett Weening

its religious meaning were pointed out to the group.

Convey Appreciation

The last photograph shown was a picture of the company's employees lined up in front of the company building with a large banner containing the words "Merry Christmas."

In concluding, Mr. Rynbrand thanked his customers for the opportunity to have served them during the year and wished them a Merry Christmas and a Prosperous New Year.



OFFICERS of the company help decorate the Christmas tree. From left are Garret Moerdyk, James Hoyt, Glen Rynbrand and Garrett Weening

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"Freon-12" and "Freon-22"—the premium quality refrigerants—are now available in these new "Zephyr" containers in 25 and 50 lb. sizes from your leading air conditioning and refrigeration wholesalers. Place your order for "Zephyr" containers today.

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are being added for your convenience
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For your convenience "Freon" refrigerants are offered in a family of containers*. Each of these types of containers has its own distinctive advantages. The container that best suits your needs is available from your leading air conditioning and refrigeration wholesaler. Call him today for your order of "Freon" refrigerants.

*1 or 2 lb. "Can-O-Gas" containers of "Freon" refrigerants are available from the Virginia Smelting Co., our nationwide sales agent and authorized repackager.



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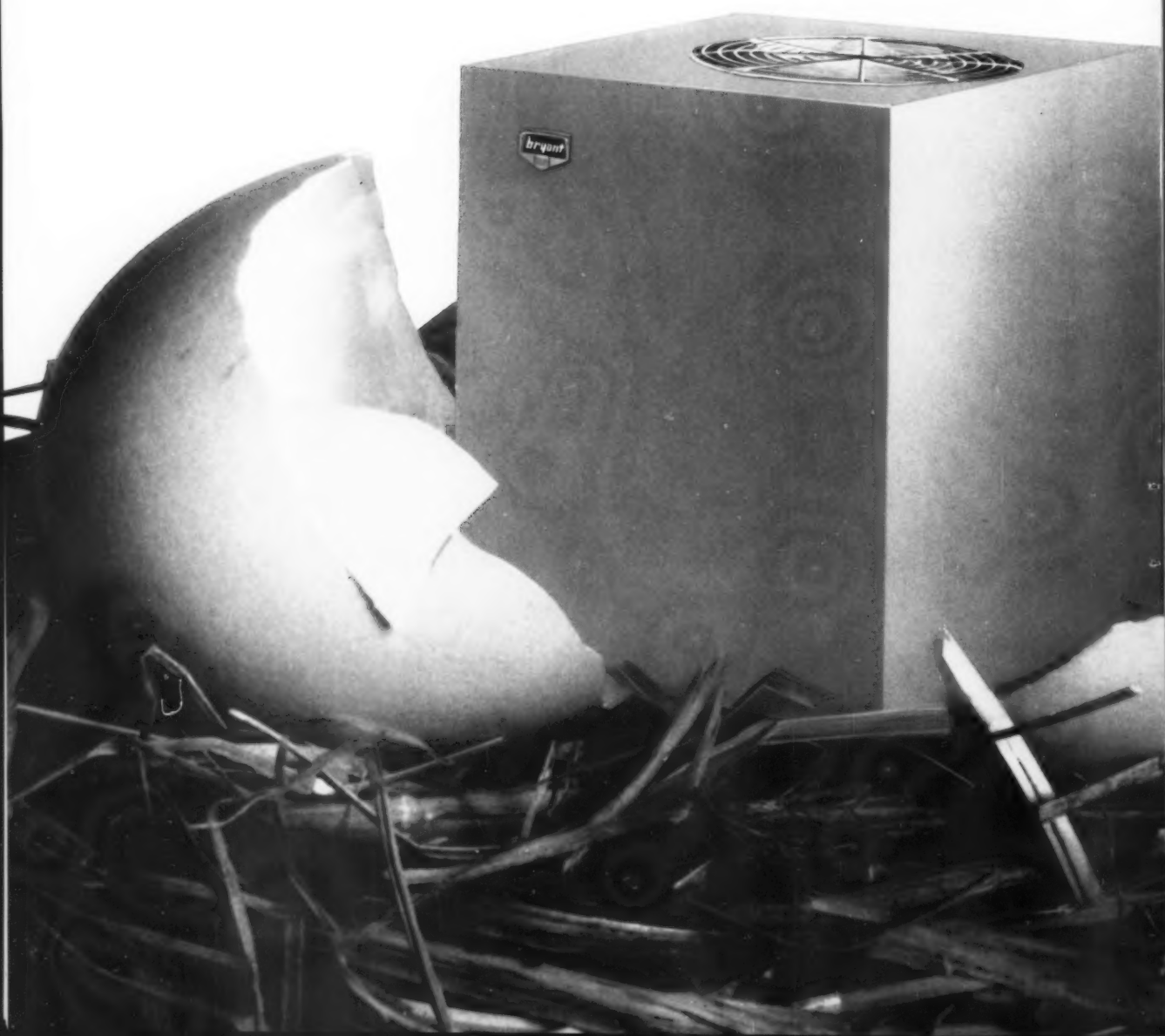
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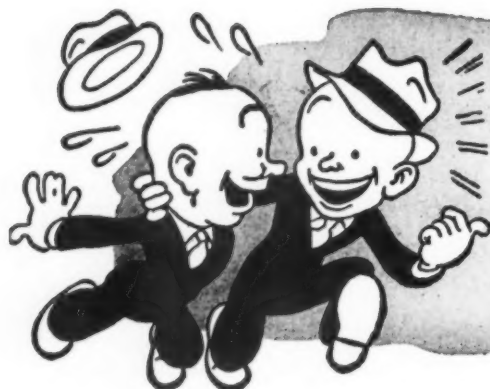
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Bryant Manufacturing Company, Indianapolis, Indiana
In Canada: Bryant Manufacturing Ltd., Toronto, Ontario





Idea Exchange for Dealers, Contractors

Publicity Creates Interest In Open House

Don't overlook the fact that the public is influenced by what they read. By stimulating the public's curiosity with newspaper publicity, you stir them to the point where they want to visit your place of business

NEWSWORTHY EVENTS often are bypassed by dealer-contractors in a hurry. Too often they feel that the effort to publicize something important that has happened to them isn't worth the time it requires. They overlook the fact that the public is influenced by what they read in newspapers and if the public's curiosity is stirred up, they will come to see for themselves.

One dealer-contractor who went all the way to get the most out of a new building he had built to handle his heating-air conditioning and sheet metal business is Clyde Carson, Dixon, Ill. The new building included a large, well-equipped air conditioned showroom and office, a well laid out sheet metal shop, and a large stock-room.

Hold Open House

To let old customers and the public know about the building

and its facilities, Mr. Carson held an open house from 7:00 a.m. to 9:00 p.m. on a Saturday. Souvenirs were given throughout the day and hot coffee, donuts and soft drinks were served "on the house."

Newspaper Publicity

Newspaper publicity for the open house began with a two page advertisement on the Thursday before the grand opening.

The two page ad was further supported by an additional two pages of ads by suppliers, subcontractors and general contractors.

Each of the supporting ads (one page preceding the two page truck and one page following) mentioned the service they had performed for the dealer-contractor.

The company's and the dealer-contractor's name was prominently used throughout each ad with congratulations and best wishes for the continued growth of the com-

pany during the coming years.

Editorial Support

Editorial support for the grand opening was also obtained. The editors, recognizing the public's interest in this event, published a photograph of the new building and of Mr. Carson. It gave a brief outline of the company's history and growth.

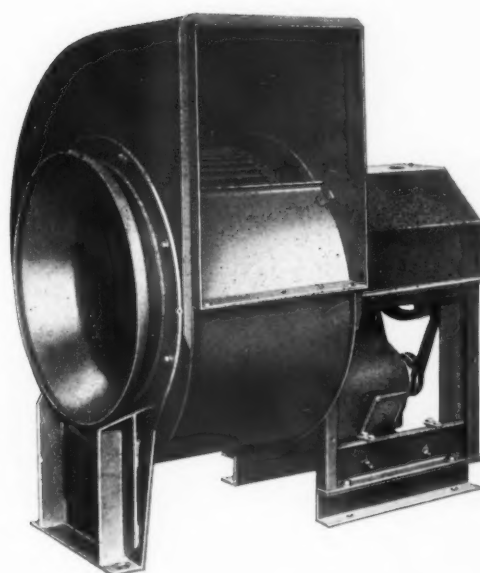
Many Advantages

Mr. Carson is a firm believer in sales promotion programs and has a continuing program that he periodically reviews and adjusts to meet business trends and conditions. The advantages of such a program are easily recognized when the history of the company is reviewed.

The firm was started by Mr. Carson with two employees in 1934 and now 26 years later, it has 10 full time employees.

CLARAGE

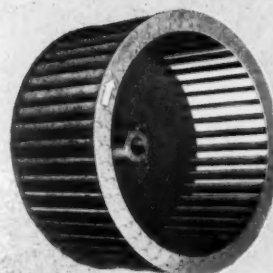
*New line of
.....
V-belt driven
Ready Units*



*Exceptionally sturdy,
quiet, ready-to-run
fan sets*

- for volumes up to 25,000 CFM
- for static pressures thru $2\frac{1}{2}$ "
- for clean air up to 300° F.

Distinguishing points — over 15 of them — make these new Clarage units outstanding. To mention a few: Better motor ventilation . . . entire drive within frame of unit . . . complete accessibility to motor, drive, and bearings. Learn more about the numerous specific advantages that mean greater value to you from Clarage. Request



LS Ready Units have Low Speed, forward curved blade wheels. These are of the long-recognized Clarage Type HV multiblade design.



or



MS Ready Units have Medium Speed, backward inclined blade wheels with non-overloading horsepower characteristic. These are of the highly regarded Clarage Type NH, Class I design.

Catalog 517 . . . 36 pages of complete information, selector charts, capacity tables, dimensions. Clarage Ready Units are ideally suited for supply or exhaust jobs — indoors or outdoors — for buildings of all types, all sizes.

Write for your Copy



Dependable equipment for making air your servant

CLARAGE FAN COMPANY

Kalamazoo, Michigan

SALES ENGINEERING OFFICES IN ALL PRINCIPAL CITIES • IN CANADA: Canada Fans, Ltd., 4285 Richelieu St., Montreal



This STEELMARK of the American Steel Industry tells you a product is made of Steel. Look for it when you buy. Place it on products you sell.

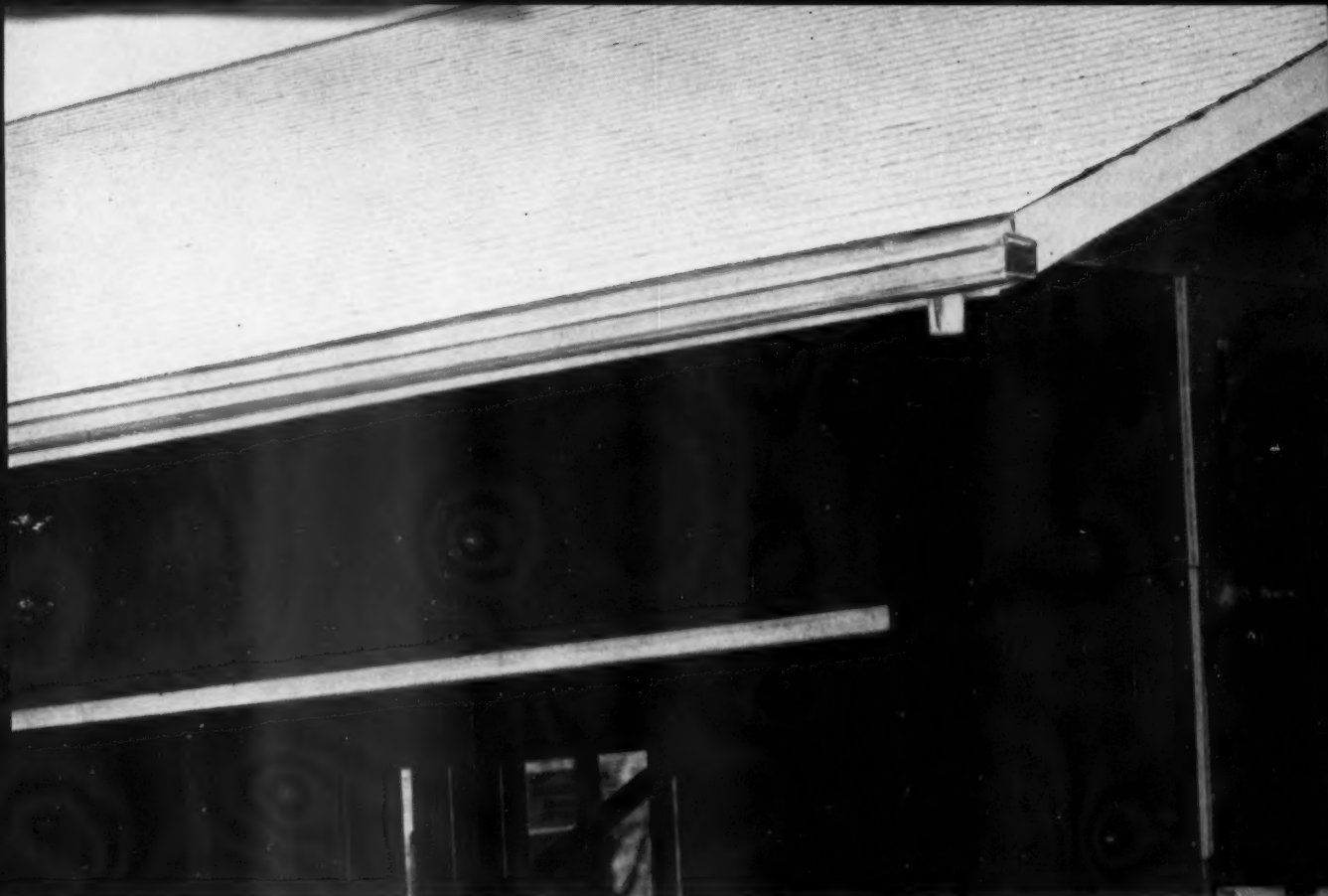
Install REPUBLIC

REPUBLIC GALVANIZED SHEETS offer ideal fabricating qualities in air conditioning, heating, ventilating, and other duct work. Uniformly-tight zinc coating will not crack, peel, or flake, even under severe forming operations. Excellent corrosion-resistance. Long trouble-free service. Available from your local steel service center.



YOUR REPUBLIC ROOF DRAINAGE PRODUCTS DISTRIBUTOR carries a complete line of everything you need—in galvanized steel, ENDURO Stainless Steel, terne, or copper, with perfectly matched accessories to assure fast, low cost installations. They go up easy, go up fast, go up to stay—and go up at a profit!





House-Long "K" Gutter in half the time . . .

WITH MORE PROFITS EVERY INSTALLATION

Now . . . you can install Republic Galvanized Steel Gutters in lengths up to 32 feet long! Installation time is cut in half—with more profits on every job.

No need to measure, cut, solder—the standard practice for old style short gutters. Just position, fasten, and the job is installed in half the time. No seams to mar the beautiful appearance of the finished job. No costly call backs.

With Republic Galvanized Steel Gutters, uniform zinc coating is extremely tight, stays that way through-

out all forming operations. Provides years of dependable protection. Serves as an ideal base for red lead or zinc chromate primers.

Republic's precision manufacturing and up-to-date equipment make this new style "K" the straightest gutter on the market. With Republic miters and other accessories, you get an exact fit every time.

Cut installation costs. Boost profits. Ask for Republic Roof Drainage Products by name. Available from your sheet metal distributor.



REPUBLIC STEEL

*World's Widest Range
of Standard Steels and Steel Products*

REPUBLIC STEEL CORPORATION

DEPT. AA-9695

1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Please send more information on the following products:

- ☐ Republic Galvanized Roof Drainage Products
- ☐ Republic ENDURO® Stainless Steel Roof Drainage Products
- ☐ Republic Galvanized Sheets

Name _____ Title _____

Firm _____

Address _____

City _____ Zone _____ State _____

Important for Management to Know Local Ordinances and State Statutes

It is to the dealer-contractor's best interest that he fully understand and observe provisions that apply to the installation of cooling equipment

KNOWLEDGE of state statutes and local ordinances cannot be emphasized too strongly for management engaged in air conditioning. This is especially true where drainage connections are necessary in the installation of cooling equipment.

A dealer-contractor's opinion towards provisions that regulate the installation of such connections and restrict such work to licensed plumbers may seem both unnecessary and unfair but so long as such laws are applicable either directly or indirectly to the installation of air conditioning equipment, it is to the dealer-contractors' best interest that they be observed.

Court Interprets Statute

Before the courts in one of the eastern states not long ago was a statute that stated, in part, "The plumbing and drainage of all buildings, both public and private, in each of the cities of this state shall be performed by persons authorized under the rules and regulations adopted by the local board of examining plumbers in conjunction with the Board of Health for plumbing and drainage, and all plumbing and drainage work shall be executed in compliance with such rules and regulations."

During the conviction of an air conditioning contractor who had disregarded this law, the highest court elaborated on the relation of such a provision to air conditioning installations. "Not only coal stoves, but gas stoves and some refrigerators and air conditioning units are connected with municipal plumbing systems," said the court.

"These modern conveniences, if the plumbing work in connection with them be done improperly, may well be the potential source of danger to the health and safety of more persons than the number in the premises involved. This is why such plumbing work is properly subject to regulation under the power delegated in the statute.

"It is not unreasonable for municipal authorities

to insist that the responsibility for altering, repairing or making the connections to any part of the plumbing system in their cities shall be upon men of good repute, character and responsibility, who have a place of business in the affected city, who have passed an examination as to their competency in their trade and who may be found promptly and held to that responsibility by the municipality or its residents for acts of commission or omission by themselves or those whom they have employed.

"We know of no trade, business or calling in the community which more vitally affects the public health and safety of city dwellers than plumbing."

The highest court emphasized that the installation of plumbing connected to such plumbing systems demands that a dealer-contractor be a licensed plumber. In this instance, as an example, the money and time spent in the litigation over the interpretation of this statute and its application to air conditioning equipment exceeded by many times the incidental trouble of complying with the statute itself.

Conviction Is Sustained

A few years after this decision was rendered a dealer-contractor tried to combat a statute of this character in an attempt to set aside a conviction and prison sentence for disobedience to such a law.

"If the act is a valid and reasonable exercise of the police power of the state," said the court in sustaining this conviction, "then it must be submitted to as a measure designed for the protection of the public and to secure it against some danger, real or anticipated, from the state of things which modifications in our social or commercial life have brought about.

"The natural right to life, liberty and the pursuit of happiness is not an absolute right. It must yield whenever the concession is demanded by the welfare, health or prosperity of the state."

NEW



ONLY
5 $\frac{7}{8}$ " H
3 $\frac{5}{32}$ " W
2 $\frac{7}{32}$ " D



SERIES 530 combination fan and limit control is available with or without manual switch for continuous fan operation.

SINGLE ELEMENT, COMBINATION FAN & LIMIT CONTROL

Here it is! It's all new...yet, each component part is proved by years and years of dependable, accurate performance in the field!

Look at its compact, *space-saving size* and shape...see its *easy-to-install single element* which is solid charged for utmost *accuracy and reliability* in responding to temperature changes. Now, look at the inside...notice its two separate *sealed contact units*, one for the fan and the other for the safety limit. Large, accessible terminals assure *easier wiring*. Note the large, easy-to-read numerals on the limit and fan scales...indicators provide simple, *finger-tip adjustment* for any desired fan operation or limit setting.

Learn more about this new control...ask your wholesaler or write to the Penn factory!

PENN CONTROLS, INC. Goshen, Indiana

EXPORT DIVISION: 27 E. 38th ST., NEW YORK, N. Y.

AUTOMATIC CONTROLS FOR HEATING, REFRIGERATION, AIR CONDITIONING, APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES



Manufacturers don't have to worry about Mrs. Perkins' "frettin"

*"Young man, I've told you, and told you that furnace
just doesn't heat my bedroom closet. Now I want it fixed!"*

About this time you have to set your jaw and once more
explain the furnace you installed can't do everything.

This type of problem is foreign to manufacturers,
but not to dealers. Lennox is acutely aware of the many
"little things" their dealers have to put up with.

This knowledge comes from constant contact in the field, for
Lennox values customer satisfaction as much as you do.
We have learned through experience and value the fact that the
heating and air conditioning business is *centered around the dealer!*

If you aren't getting the solid backing you deserve from
your supplier, take the time to get the complete Lennox story.

Call or write today. No obligation.

LENNOX

*World leader in indoor comfort
for home, business, schools*

Lennox Industries Inc. founded 1895 • Marshalltown, Iowa • Columbus, Ohio • Syracuse,
N. Y. • Fort Worth, Texas • Salt Lake City, Utah • Decatur, Ga. • Los Angeles, Calif. • Des
Moines, Iowa • Lennox Industries (Canada) Ltd. • Toronto, Montreal, Calgary and Vancouver

WHAT ASSOCIATIONS ARE DOING

You Can Improve Your Advertising

**... by adapting these rules to fit your business,
speaker tells sheet metal distributors**

"MASS DISTRIBUTION is a necessary corollary to mass production, and advertising is the spark plug of distribution," Melvin E. Tharp of the Columbus Citizen-Journal told members of the National Association of Sheet Metal Distributors at the group's recent annual convention. Mr. Tharp pointed out that in the United States we produce about 25 percent of the world's goods, and over 40 percent of the world's manufactured goods. "Such mass production is fine," he said, "but if you do not have mass consumption, then our national economy is in trouble."

Warning against devoting all time, money and thinking on production and neglecting the important matters of advertising and selling, he quoted the story of the man who had just gone out of business. Asked the reason for his failure, the man said, "Too much advertising." "Yours?" a friend asked. "No," was the reply, "my competitors'."

Mr. Tharp outlined several rules to keep in mind in conducting a good advertising and public relations program:

Decide How Your Firm Differs from Others

"What's different about your business than anybody else's? Do you offer free delivery while others don't? Do you make it a point to keep such ample supplies on hand that you can deliver the same day as ordered? Do you offer a special plan to cooperate with your dealer-contractors on their advertising?"

"Make a list of the things that are different about your products or services, pick out the best ones, and you have the makings of a good, hard-hitting advertising campaign. Your advertising manager should be able to do the rest."

Find Out What Customers Like

"Talk to your customers. Find out what it is they like about your product or service, and then advertise these things to your non-customers. You might be surprised at what you find out. Pick out the good,

strong selling points your customers bring up and pass them on to your advertising manager.

Stick to Your Theme

"Once you get a campaign going, stay with it. It takes a lot longer for the public to absorb your message than it does for the people in your business who see it and live with it every day. Through consistent advertising, create a picture in the minds of your dealer-contractors and the public of the kind of business you are — and the products and services you have to offer.

Advertise Consistently

"Keep your product or service constantly before the public — every week, every month, every year. Whether you sell a consumer product or service, or a non-consumer product or service, there are new customers coming on all the time. Marriages and births are going along at a tremendous rate, which means new households with new needs. New businesses are being formed every week, old ones expanding, and going businesses are looking for a better supplier.

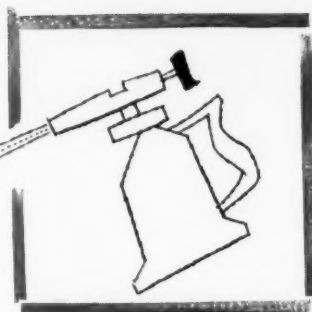
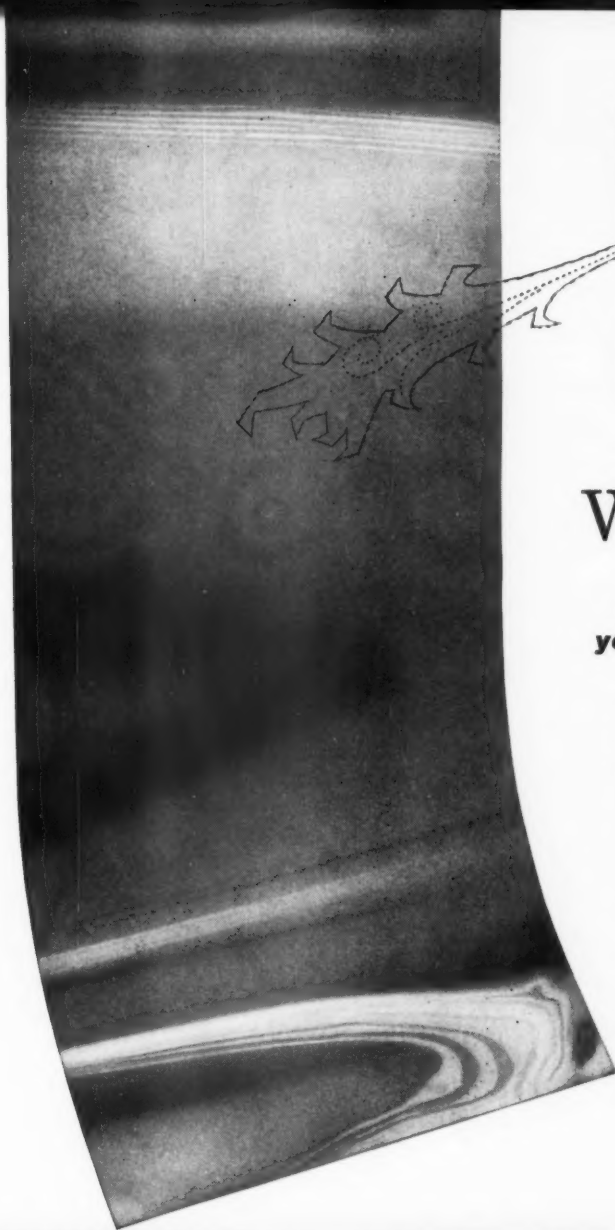
Limit Your Media

"The worst thing you can do is take a modest budget and scatter it through a dozen different media. Spend a few dollars in radio, a few dollars in newspapers, a few dollars in TV, a few dollars in book matches, and you have not made a real impression on anyone. Select your medium, and then be dominant in that medium.

Sell Benefits Your Firm Can Offer

"Remember that the prospect is interested in what you can do for him, not what he can do for you. Get the benefits your firm can offer into your head-

(Continued on page 80)



When the Heat's on

**...you'll get more than sympathy from
your Republic Stainless Steel distributor!**

Like the ENDURO® Stainless Steel he sells, your Republic distributor has the required "physicals". When the heat's on, you can count on him for *unbiased* technical assistance, *unbeatable* stainless steel, *unconditional* dedication to SERVICE.

A very good man to know, your Republic distributor offers a complete selection of stainless steel, adequate stocks, and a full-time delivery system that can be there fast. See yourself: *this man can put out the fire!*



REPUBLIC

Stainless Steel

CALL YOUR REPUBLIC STAINLESS STEEL DISTRIBUTOR AT THESE STEEL SERVICE CENTERS

NEW ENGLAND STATES

Bruce and Cook, Inc.,
Stamford, Connecticut
Edgcomb Steel of New England, Inc.
Milford, Connecticut
Boston, Massachusetts
Nashua, New Hampshire
Slatersville, Rhode Island
Bennington, Vermont
Hawkrider Brothers Company
Boston 10, Massachusetts

MIDDLE ATLANTIC STATES

Abarry Steel Company
Perth Amboy, New Jersey
Atlas Steel Supply Company
Morris Plains, New Jersey
Benedict-Miller, Inc.
Lyndhurst, New Jersey
Fisher Bros. Steel Corp.
Englewood, New Jersey
International Corporation
Hillside, New Jersey
Miller Steel Company, Inc.
Hillside, New Jersey
Atlas Supply Company, Inc.
Bronx 58, New York
Beale, McCarthy and Rogers, Inc.
Buffalo 5, New York
Brace-Mueller-Huntley, Inc.
Buffalo, New York
Rochester, New York
Syracuse, New York
Ernst Iron Works
Buffalo, New York
Follansbee Metals Corp. of New York
Rochester, New York
Hamsley, Inc.
Brooklyn 32, New York

K. & S. Metal Supply, Inc.

Long Island City, New York
Metal Purchasing Company, Inc.
New York 1, New York
Schwartz and Cohn, Inc.
Brooklyn, New York
Hill-Chase and Company, Inc.
Philadelphia 34, Pennsylvania
Potts-Farrington Company
Philadelphia 29, Pennsylvania
Horace T. Potts Company
Philadelphia 34, Pennsylvania
The Warren Company
Erie, Pennsylvania
Williams and Company, Inc.
Pittsburgh 33, Pennsylvania

EAST NORTH CENTRAL STATES

Chicago Steel Service Company
Chicago 32, Illinois
Hubbell Metals Inc.
Indianapolis 12, Indiana
Huron Steel Company
Detroit 16, Michigan
Meier Brass & Aluminum
Hazel Park, Michigan
The Ohio Metal & Manufacturing Co.
Dayton 2, Ohio
Varys Brothers, Inc.
Columbus 8, Ohio
Williams and Company, Inc.
Cleveland 14, Ohio
Cincinnati 29, Ohio
Columbus 8, Ohio
Toledo 12, Ohio

WEST NORTH CENTRAL STATES

Hammond Sheet Metal Company
St. Louis 5, Missouri
Hubbell Metals Inc.
Kansas City 16, Missouri
St. Louis 3, Missouri
E. M. Jorgensen Company
Wichita, Kansas
Marsh Steel Corporation
Wichita, Kansas
North Kansas City 16, Missouri

SOUTH ATLANTIC STATES

Eagle Roofing and Art Metal
Works, Inc.
Tampa, Florida
Reynolds Aluminum Supply Company
Miami, Florida
Atlanta 1, Georgia
Savannah, Georgia
Raleigh, North Carolina
Richmond, Virginia
J. M. Tull Metal and Supply Co., Inc.
Jacksonville, Florida
Miami, Florida
Tampa, Florida
Atlanta 2, Georgia
Atlantic Steel Company
Atlanta 1, Georgia
Hubbell Metals Inc.
Marietta, Georgia
Hill-Chase Steel Company
of Maryland
Baltimore 3, Maryland
Vance Iron and Steel Company
Charlotte, North Carolina
Dominion Culvert and
Metal Corporation
Roanoke 5, Virginia

EAST SOUTH CENTRAL STATES

Atlantic Steel Company
Birmingham, Alabama
Reynolds Aluminum Supply Company
Birmingham, Alabama
Louisville, Kentucky
Memphis, Tennessee
Nashville, Tennessee
J. M. Tull Metal & Supply Co., Inc.
Birmingham, Alabama
Hubbell Metals Inc.
Louisville, Kentucky
Memphis, Tennessee
Williams and Company, Inc.
Louisville 3, Kentucky
Mid-State Steel, Inc.
Nashville, Tennessee
Siskin Steel and Supply Company, Inc.
Chattanooga, Tennessee
Vance Iron and Steel Company
Chattanooga, Tennessee

WEST SOUTH CENTRAL STATES

Hammond Sheet Metal Company
Fort Smith, Arkansas
Little Rock, Arkansas
Marsh Steel Corporation
Baton Rouge, Louisiana
E. M. Jorgensen Company
Tulsa 5, Oklahoma
Dallas 22, Texas
Houston 1, Texas

MOUNTAIN STATES

Ducommun Metals & Supply Co.
Phoenix, Arizona

E. M. Jorgensen Company

Denver, Colorado
Phoenix, Arizona
Marsh Steel Corporation
Denver 16, Colorado
Pacific Metal Company
Boise, Idaho
Structural Steel and Forge Co.
Salt Lake City, Utah

PACIFIC STATES

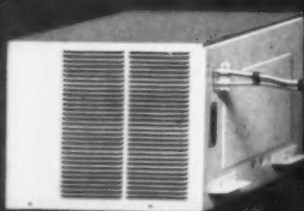
Allen Fry Steel Company
Los Angeles, California
Ducommun Metals & Supply Co.
Berkely 10, California
Los Angeles 54, California
National City, California
Seattle 8, Washington
E. M. Jorgensen Company
Los Angeles 54, California
Oakland 23, California
Seattle 24, Washington
American Steel Warehouse Co.
Portland 14, Oregon
Pacific Metal Company
Portland 9, Oregon
Seattle, Washington

CANADA

Drummond McCall and Co., Ltd.
Toronto, Ontario
Montreal, Quebec

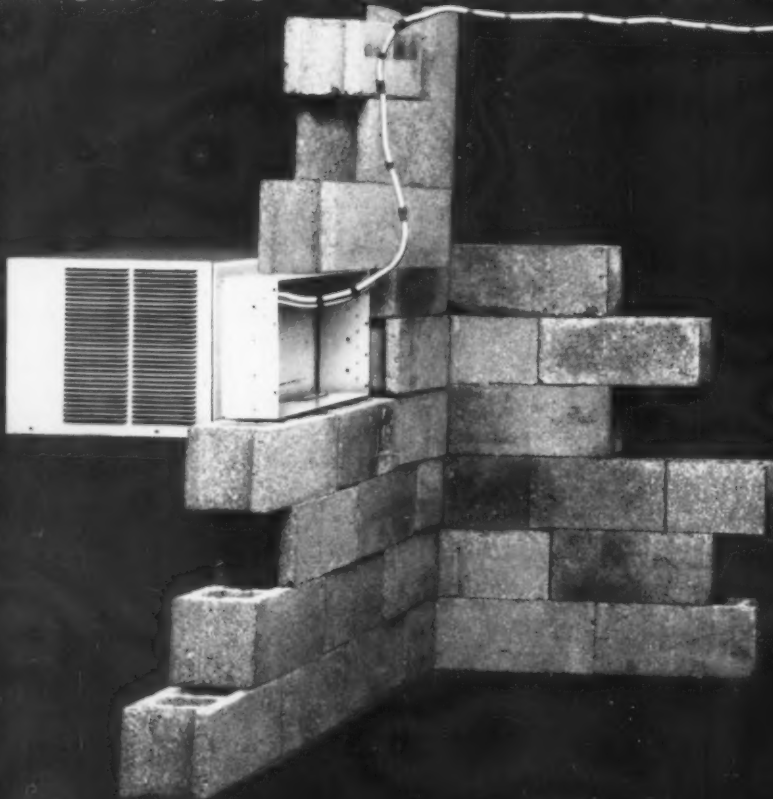
HERE'S WHAT YOU GET

An outdoor compressor section... connected by 18 feet of flexible hermetic tubing... to a furnace-top cooling coil—all factory-sealed, charged and tested. Plus a steel wall mounting frame.



HERE'S HOW YOU INSTALL IT...FAST

Bolt outdoor section to steel mounting frame...remove shipping braces...carry cooling coil to furnace and slide in. Hermetic installation complete. No concrete slabs to pour or set, no lines to bend or braze, no refrigerant charging, no outdoor wiring.



HERE'S HOW IT ASSURES YOU THE BEST

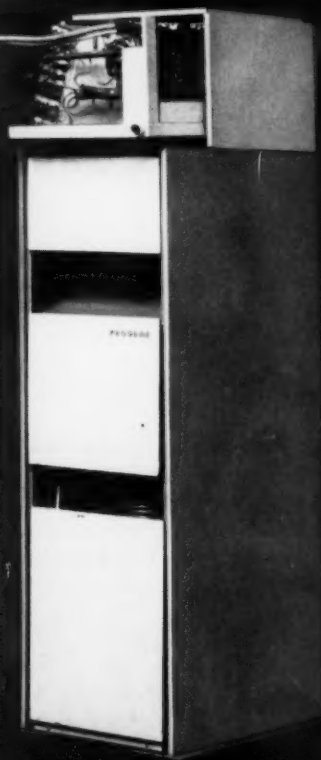
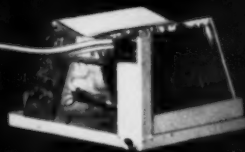
Spectacular savings in installation costs... plus a spectacular expansion in your market—these are only some of the advantages that Fedders FlexHermetic Air Conditioners offer to every installer.

Equally important is the assurance of outstanding performance and over-the-years reliability which FlexHermetic brings to every air conditioning job. All the critical installation procedures that have to be carried out under makeshift on-the-job conditions with conventional remote air conditioners, are performed under

carefully controlled factory conditions by Fedders' technicians.

After a battery of tests proves that the hermetic circuit is perfectly sealed, the system is carefully evacuated. Then it is charged with refrigerant to the precise ounce. Finally the entire FlexHermetic is subjected to rigorous running tests.

All the factory techniques which have kept 2,000,000 Fedders factory-charged and factory-sealed air conditioning systems operating perfectly over the years, assure a perfect FlexHermetic installation every time.



REMOTE AIR CONDITIONING POSSIBLE

(The furnace? Fedders' new FlexAire; with a relay-controlled, multi-speed blower that provides proper cfm for cooling and for heating automatically.)

• • • **H·E·R·M·E·T·I·C**
UNIFIED REMOTE CENTRAL AIR CONDITIONING SYSTEM BY
FEDDERS

Central Air Conditioning Division, Dept. AA-6
Fedders Corporation, Maspeth 78, New York

Please send information and specifications on Fedders
FlexHermetic Air Conditioners ☐; Fedders FlexAire Furnaces ☐;
Have a Representative call ☐.

NAME _____

FIRM _____

ADDRESS _____

(Town)

(County)

(State)

WITH THE ASSOCIATIONS

(Continued from page 76)

lines and into your copy, too. Explain to him what you can do to save him time and money.

Repeat Successful Ideas

"Just because you've used an idea before, don't rule it out for another year. When you get a good advertising idea, keep repeating it from time to time until it wears itself out. It may be good for years.

Don't Worry About Competitor's Advertising

"I am afraid some people spend more time studying their competitor's advertising than they do their

own. If you do that, you are apt to end up with a negative approach rather than a positive one. So, forget your competitor. Concentrate on the rules I have given you and you will have a positive, hard-hitting advertising campaign."

Dr. Robert Bartels, professor of business organization, Ohio State University, discussed "Challenges to Credit Selling." W. L. Sandston, commercial supervisor of economic research, Armco Steel Corp., reviewed "The Business Outlook for 1960." Other speakers included Cloyd S. Steinmetz, director of sales training, Reynolds Metals Co., and Robert W. Mason, Marathon Equipment & Supply, Ltd.

(More association news on page 84)

Coming Events

June

June 16-18 — Sheet Metal, Air Conditioning and Roofing Contractors' Association of Pennsylvania, annual convention. Lawrence Hotel, Erie, Pa. Earl W. Liebermann, secretary, 1411 Merchant St., Ambridge, Pa.

June 30-July 2 — Carolinas Roofing and Sheet Metal Contractors' Association, annual convention. Ocean Forest Hotel, Myrtle Beach, S. C. H. J. Stockard Jr., executive secretary, P. O. Box 408, Raleigh, N. C.

July

July 7-9 — Roofing, Sheet Metal, Heating & Air Conditioning Contractors' Association of Alabama, annual convention. Buena Vista Hotel, Biloxi, Miss. Ferris S. Ritchey Jr., executive secretary, 405 Frank Nelson Bldg., Birmingham.

July 21 — Chicago Warm Air Golf Association, golf outing. Itasca Country Club, Itasca, Ill. Albert Verbeek, Verbeek Heating, 353 E. Kensington Ave., Chicago 28.

September

Sept. 8 — Chicago Warm Air Golf Associa-

tion, golf outing. Ruth Lake Country Club, Hinsdale, Ill. Albert Verbeek, Verbeek Heating, 353 E. Kensington Ave., Chicago.

October

Oct. 12-14 — American Gas Association, annual convention, Atlantic City, N. J. C. S. Stackpole, Managing Director, 420 Lexington Ave., New York 17.

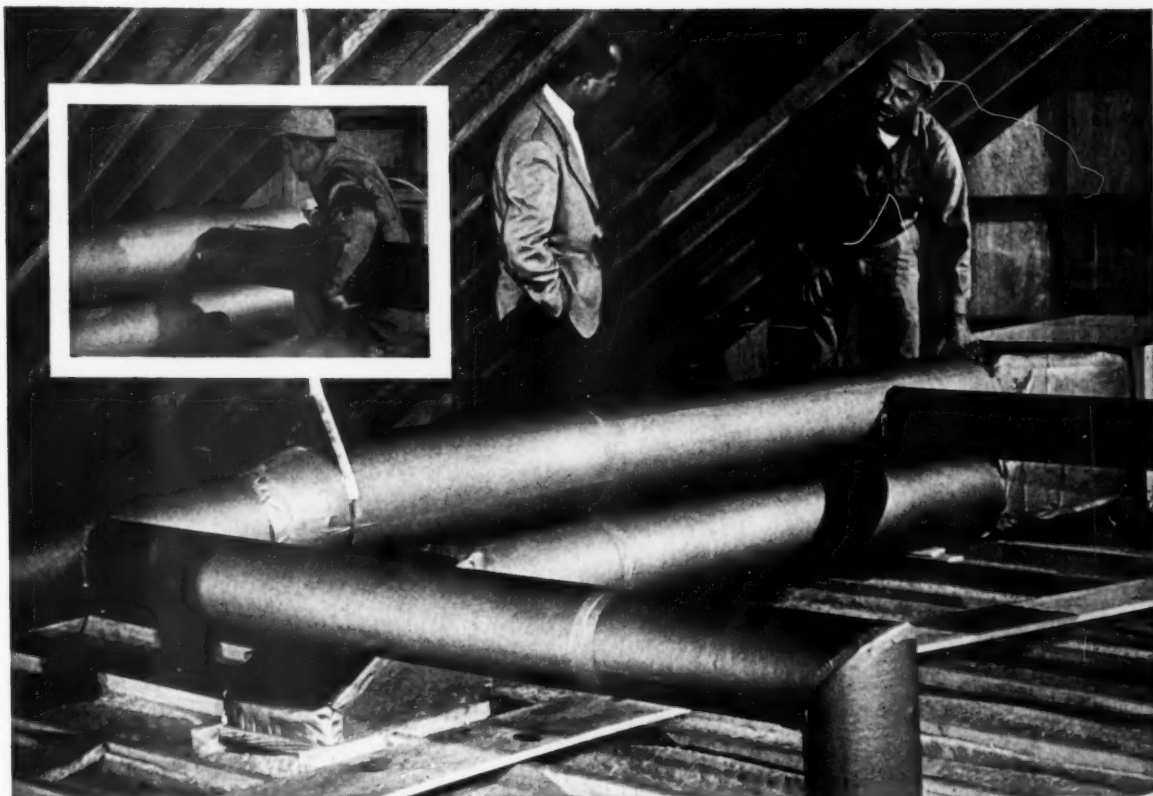
November

Nov. 14-15 — National Warm Air Heating and Air Conditioning Association, annual convention. Statler-Hilton Hotel, Cleveland. J. M. Martin, managing director, 640 Engineers Bldg., Cleveland 14.

Nov. 16-17 — National Warm Air Heating and Air Conditioning Association, Board of Trustee meetings. Statler-Hilton Hotel, Cleveland. J. M. Martin, managing director, 640 Engineers Bldg., Cleveland 14.

Nov. 18-22 — Air-Conditioning and Refrigeration Institute, annual meeting. Hollywood Beach Hotel, Hollywood Beach, Fla. Geo. S. Jones Jr., managing director, 1346 Connecticut Ave., Washington 6, D. C.

(For additional Coming Events see page 84)



Warm air contractor gets cooling job in wet heat building... **AND SAVES 20%!**

Who says that opportunities and profits for the warm air heating contractor are gone when a building is sold on some type of "wet heat"? Certainly not the warm air contractors who are getting cooling jobs by bidding G-B DUCT—the round, prefabricated glass fiber duct. Where no warm air ducts exist, G-B DUCT can be simply and economically installed in attics and crawl spaces—a real "job getter" and a real profit-maker!

Take for example, the experience of Robert Mattingly, Chicago air conditioning contractor, who installed air conditioning in the hot-water-heated Graystone Floral Shop. Because the installation crew was able to install a complete G-B DUCT system in this 26' x 96' structure in just one day,

Mattingly reports he saved 20%, and he plans to use G-B DUCT on all future jobs of this type.

G-B DUCT comes in 6' ready-to-use sections that can be cleanly and easily cut and fitted right on the job—there is no costly in-the-shop preassembly. Available in standard sizes up to 18" diameter, G-B DUCT fits snugly and permanently together with standard metal sleeves and vapor barrier tape. Elbows and T fittings are also easily fabricated with a knife and factory-supplied templates.

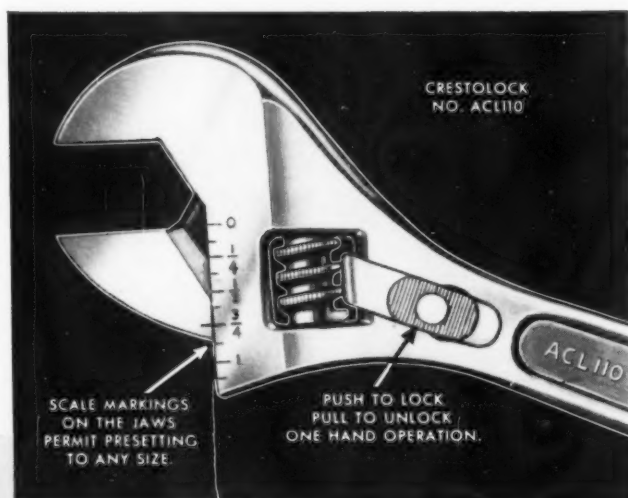
Made entirely of glass fiber insulation encased in an airtight vapor barrier sleeve, G-B DUCT provides maximum thermal and acoustical efficiency, as well as positive protection against sweating and moisture build-up. In fact, the operator of the floral shop reports that during the cooling season the average electric bill was only \$50, of which only \$15 was estimated to be for air conditioning—substantially less than had been anticipated.

For profitable, efficient results on your next air conditioning job in a "wet heat" building, use G-B DUCT. Write today for product information.

GUSTIN-BACON *Mfg. Co.* **gb**
204 W. 10th St., Kansas City, Mo.
Thermal and acoustical glass fiber insulations . . . Molded glass fiber pipe insulation . . . Couplings and fittings for plain and grooved end pipe.

THERE IS NO OTHER LOCKING WRENCH LIKE CRESTOLOCK®

CRESTOLOCK is a practical, dependable adjustable wrench that can be locked at any infinite opening size within its capacity. It's the famous Crestoloy Wrench PLUS a simple, positive, thumb-operated locking device. There's no strain on the lock...no projections. Once locked, it stays locked until you change it. Available in 8, 10 and 12 inch sizes, chrome plated with stainless steel locking device.



Sold by Hardware Dealers and Industrial Distributors everywhere.

NO OTHER WRENCHES LIKE CRESCENT

CRESCENT and CRESTOLOY Wrenches are made by the originators of the 22½° adjustable wrench. They have been widely copied but never equalled for design, balance, quality and all-around performance. The buyer who wants top value in tools insists on CRESCENT.



Crescent is our trade-mark, registered in the United States and abroad, for wrenches and other tools. Sold by leading distributors and retailers everywhere and made only by **CRESCENT TOOL COMPANY, JAMESTOWN, NEW YORK**

A TREMENDOUS NEW SALES OPPORTUNITY:

CARRIER AUTOMATIC AIR PURIFIER

Now, for the first time, you have the answer for millions of Americans who want better indoor air. The new Carrier Automatic Air Purifier, adaptable to any forced air heating or cooling system, is the first practical way to control air-borne dirt and odors, as well as winter humidification.

REMOVES DUST, ODORS, POLLEN

With the new Carrier Automatic Air Purifier, you can offer relief from many harmful air-borne elements, stale air, and such troublesome odors as cabbage and tobacco.

CONTROLS HUMIDITY

The new Carrier Automatic Air Purifier gives you the sales appeal of freedom from irritation by bone-dry indoor air in winter. It adds moisture under precise control, keeping humidity at the desired level.

CLEANS ITSELF

The new Carrier Automatic Air Purifier gives you a unique selling advantage over ordinary filter devices: It's self-cleaning, operating at constant efficiency without frequent changing or cleaning of filters.

ECONOMICAL

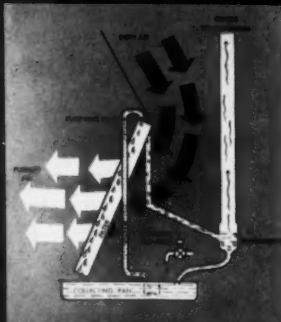
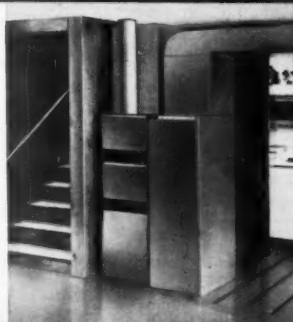
The new Carrier Automatic Air Purifier costs about \$250 when installed as part of a new forced air system in an average home... slightly higher when added to an existing system.

KEY TO A VAST NEW MARKET

Learn how the Carrier Automatic Air Purifier can open up a profitable new sales opportunity, with every homeowner or home buyer a potential customer. Call your Carrier distributor, listed in the Yellow Pages. Or, write Carrier Corporation, Syracuse 1, New York.

COMPACT AS A MODERN FURNACE

The Carrier Air Purifier (unit on right) replaces the return air duct, occupies little more space than a modern heating unit. Every homeowner with a forced air system, and every home buyer wanting complete air conditioning, is a prospective customer when you offer this remarkable new device.



HOW THE CARRIER AIR PURIFIER WORKS

Filter is constantly bathed by purifying fluid which absorbs odors and washes dirt into collecting pan. Part of the fluid is drained into regenerator, where odors are removed and water minerals are precipitated to keep the humidifying surface clear. A humidistat controls humidity level.

MORE PROOF OF
BETTER AIR CONDITIONING FOR EVERYBODY



EVERYWHERE

Coming Events

(Continued from page 80)

November

Nov. 27-30 — Northamerican Heating & Air-conditioning Wholesalers, annual convention, Statler-Hilton, Detroit. Wilbur R. Bull, managing director, 1200 W. Fifth Ave., Columbus, O.

R. C. Cross, executive secretary, 234 Fifth Ave., New York.

Feb. 13-16 — International Heating & Air-Conditioning Exposition. International Amphitheatre, Chicago. E. K. Stevens, exposition manager, International Exposition Co., 480 Lexington Ave., New York 17.

1961

February

Feb. 13-16 — American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., semi-annual meeting, Chicago.

April

Apr. 5-7 — Gas Appliance Manufacturers' Association, annual meeting. Boca Raton Hotel and Club, Boca Raton, Fla. Gas Appliance Manufacturers' Association, 60 E. 42nd St., New York 17.

Alabama Apprentices To Receive Awards

BIRMINGHAM — Cash awards in the recently completed apprenticeship contest sponsored by the Roofing, Sheet Metal, Heating and Air Conditioning Contractors' Association of Alabama totaled \$150. The contest was divided into four categories to accommodate first, second, third and fourth year apprentices. Projects assigned were in keeping with the amount of training apprentices in each of the four groups had received. First prize in the fourth year category was \$50; third year, \$40; second year, \$35; and first year, \$25. All awards will be presented at the association's state convention.

Gas Vent Institute Moves to New Offices

CHICAGO — Offices of the Gas Vent Institute are now located at 333 N. Michigan Ave., Chicago 1. The institute's new telephone number is Central 6-0633.

Merchandisers Elect Officers

BUFFALO — John J. Ryan, Follansbee Metals, Rochester, was recently elected president of the Merchandisers' Association, auxiliary to the New York State Sheet Metal, Roofing and Air Conditioning Contractors' Association. Other officers elected are: first vice president, Theo. A. Crosby, Whitehead Metal Products Co., Brewerton; second vice president, Robert Powell, Brace-Mueller-Huntley, Inc., Rochester; secretary, Paul W. Lane, John B. Davie Co., Rochester; and treasurer, Fred C. Baumbach, Climate Equipment & Supply Co., Inc., Rochester.

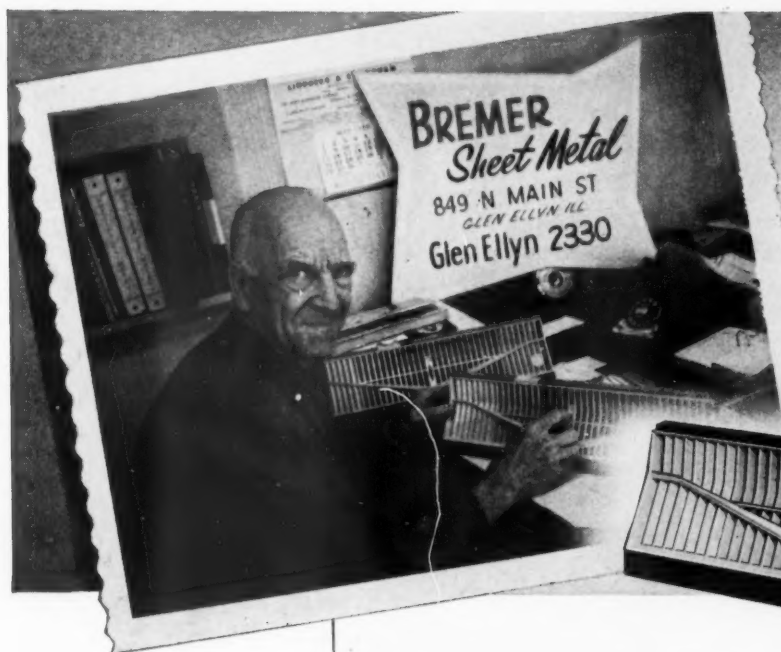
Directors with terms ending in 1961 are A. R. Wheeler, Whitehead Metal Products Co., Buffalo, and Fred C. Baumbach. Serving until 1962 are Richard Jones, American Brass Co., Buffalo, and F. A. Johnson, Duro-Dyne Corp., Brooklyn. Elected to serve until 1963 were A. N. Paden, Labco, Inc., and J. J. Ryan, Follansbee Metals.

Recommends Manual That Lists Minimum Prices

COLUMBUS, O. — Art Haire, chairman of the economic betterment committee of the Heating, Air Conditioning and Sheet Metal Association of Columbus, reported recently on the findings and recommendations of this committee. One recommendation calls for the publishing of a handbook containing recommended minimum prices for most of the controls and replacement parts presently being handled by members.

Kalamazoo Dealers Hold Dinner Meeting

KALAMAZOO, MICH. — Members of the Kalamazoo Heating & Air Conditioning Association gathered recently at Crooked Lake to enjoy their annual ham dinner at the summer home of John De Haan. Bernard Sehy was in charge of entertainment.



*Snapshot of a
successful
businessman
... and a
successful
product!*



* NEW High Impact
Polystyrene Grille

"There are 7 good reasons why we like the NEW* Air Control Super 38 Diffuser"

John Bremer
Bremer Sheet Metal Works
Glen Ellyn, Illinois

Bremer Sheet Metal Works,
founded in 1945 by brothers
John and Ted Bremer, has
grown with the rapidly expand-
ing west suburban Chicago
area. Quality and service have
been the reasons for the busi-
ness success they enjoy today.



- 1 "Its design gives the best diffusion across the whole wall area that we've found."
- 2 "Home owners where we installed the Super 38 tell us they were warm and comfortable during even the coldest months of last winter."
- 3 "There's absolutely no 'whistle' with the Super 38 ... you get complete closure."
- 4 "The damper operator is easy to get to ... easy to work."
- 5 "That high impact polystyrene face never cracks, rusts or dents."
- 6 "Our customers like it from the decorative standpoint ... its design and neutral tan color go well with anything."
- 7 "It's very competitively priced."

\$4.65 each, list.

Get the profit-filled facts
about the New Super 38
and our many other
"customer approved" Air
Control registers, grilles,
diffusers and sheet metal
screws ... the most
complete line of its
kind available.

For a **FREE** copy of Catalog 60-AC
clip this coupon to a postcard and mail to
AIR CONTROL PRODUCTS, INC., 160 Center St., Coopersville, Mich.

NAME _____
ADDRESS _____
CITY _____ STATE _____



Leigh Industries Inc.

Another new subsidiary of Air Control Products, Inc., Dept. 160 P. O. Box 2599, Asheville, N. Carolina. **Sales and Engineering Offices:** Coopersville, Mich.
West Coast Warehouse: Leigh Industries (California), Inc., 649 S. Anderson St., Los Angeles, California. **Made in Canada by:** Leigh Metal Products Ltd.,
72 York St. London, Ont. **Prairie Provinces Affiliate:** Leigh-Tornel Distributors Ltd., 549 Archibald Street, St. Boniface, Manitoba—Copyright 1960-ACP, Inc.



HOMEWORK means totally trained employees

Exclusive Westinghouse Home Training Course Keeps Your Employees Up to Date

To the comprehensive Westinghouse local and factory service training program, we've added an important plus—a home training program to keep your employees up to the minute on product application and sales techniques, without pulling them off the job.

Here is a training plan which you can supervise. All subjects are covered . . . all your employees are covered . . . and each one can concentrate on specific subjects that best help him in his job.

The course was developed in answer to your needs

for thoroughly trained people. It builds you and your people as professionals. Consumers and builders alike recognize the value of professionalism. It's the most important value in adding to your profits.

Training is just one of the powerful forces that work for you. Add a full line of heating and cooling *products*, field *service* assistance, realistic *financing* assistance, specific local *promotions* PLUS a powerful brand name—Westinghouse—for **TOTAL SELLING POWER**.

For more information call your local Westinghouse representative or write: Don Meckstroth, Manager of Marketing, Air Conditioning Division, Westinghouse Electric Corporation, Staunton, Virginia.

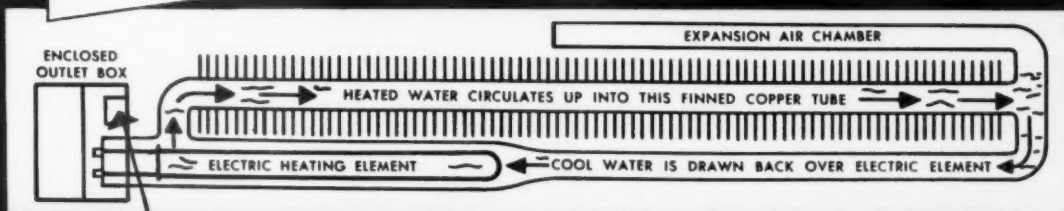
J-80538

YOU CAN BE SURE...IF IT'S Westinghouse

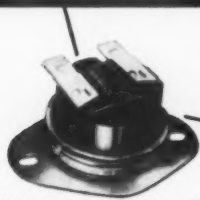
TUNE IN WESTINGHOUSE-CBS TV-RADIO COVERAGE
PRESIDENTIAL CONVENTIONS, JULY 10-29

INTERNATIONAL Chooses KLIXON F.T.C.* Snap-Acting Thermostats...

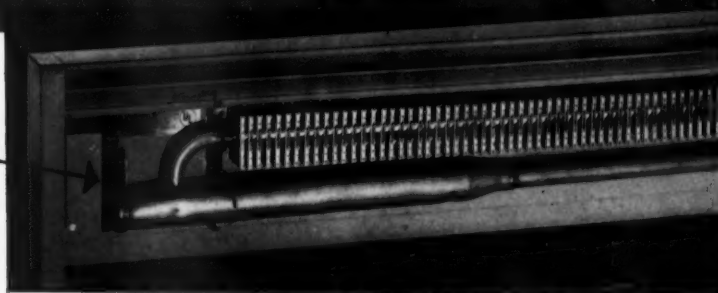
For accurate,
dependable
control, ease
of application,
low cost in their
Hot Water Electric
Baseboard Heaters.



Schematic drawing showing liquid flow in International's Electric Baseboard Heater.



KLIXON F.T.C. Type 204 Thermostat
used as a temperature
limit control.



The new International electric baseboard heater utilizes circulating liquid in a self-contained system.

In developing these new heaters, International Oil Burner Co., Electric Heat Division, 3800 Park Ave., St. Louis 10, Mo., chose KLIXON F.T.C. type 204 Thermostat to provide operating temperature limitation at the optimum level.

International also uses KLIXON F.T.C. Snap-

Acting Thermostats in many other types of heating equipment.

Here are the advantages of KLIXON F.T.C. on wet and dry heating . . . control application is laboratory engineered . . . laboratory performance is delivered to the job . . . service calls resulting from tampering with control adjustments are eliminated . . . peak control efficiency lasts indefinitely.

*F.T.C. — "Fixed Temperature Control" that assures proper operation of the unit as designed by the manufacturer.



TEXAS INSTRUMENTS
INCORPORATED

METALS & CONTROLS DIVISION
5706 NORTH MAIN ST. • VERSAILLES, KENTUCKY

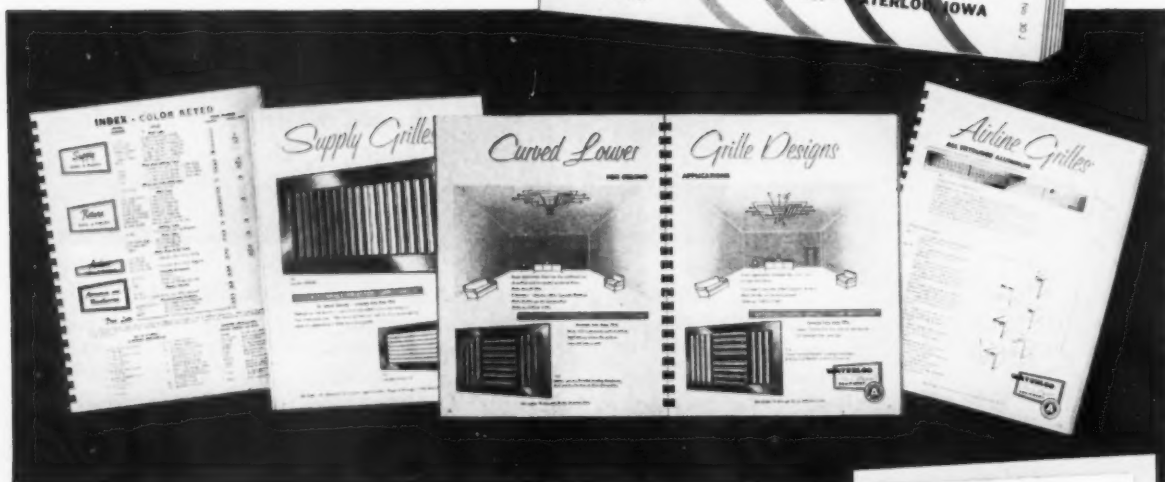
Spencer Products: Commercial Controls Department

The Producers' Council of
THE AMERICAN INSTITUTE OF ARCHITECTS
*awards** Certificate of Merit to

WATERLOO CATALOG

*Presented at the A.I.A. Convention
in San Francisco on April 18, 1960

The Producers' Council, Inc. of Washington, D.C. has awarded a Certificate of Merit in the 1960 Building Products Literature Competition to a comprehensive air diffusion equipment catalog published by Waterloo Register Co., Inc. The Award was made for "an outstanding effort in the production of informative, high quality product literature."



Write for your free copy of this
comprehensive guide to the quality-built Waterloo line.

WATERLOO REGISTER COMPANY, INC.
P.O. BOX 72, WATERLOO, IOWA

WATERLOO
Air Diffusion
EQUIPMENT



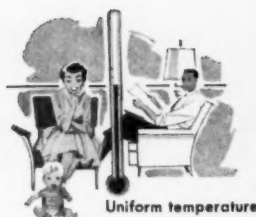
only an
ELECTRIC FURNACE
 can provide all
 these benefits...

...only the

STEWART-WARNER

ELECTRO-FLO FURNACE

has this sensational
 money-saving control



The Stewart-Warner Electro-Flo Furnace consists of furnace and blower sections which can be arranged as vertical or counterflow models.

The Electro-Flo Furnace introduces a new conception of electric heating...*the most completely modulated electric furnace on the market!* It employs air to distribute heat and offers these outstanding advantages—

1. Exclusive Selective-Sequencer which *modulates heat input* to exactly match heat loss.
2. Permits humidity control.
3. Prevents accumulation of stale, offensive odors.
4. Permits introduction of fresh air for ventilation.
5. Constant air circulation prevents "layer-cake" heating.
6. Easily adaptable to summer cooling—using same ducts as for heating.
7. Filters the air clean of dust and pollen.

HOW THE SELECTIVE-SEQUENCER WORKS

Depending upon the required capacity, the furnace section contains from 3 to 9 pairs of *sheathed Calrod* heating elements, each pair with an output of approximately 10,000 BTU/hr. Elements are controlled by the motor-operated Selective-Sequencer.

When the thermostat calls for heat, the Selective-Sequencer switches on the first heating element and simultaneously starts the blower. As the thermostat continues to call for

heat, successive elements are turned on to meet the demand.

When the heat demand is satisfied, the Sequencer reverses itself, dropping out the heat stages. The cycling on and off of the thermostat will cause the Sequencer to "play" between what ever number of heat stages are necessary to keep room temperature at the desired degree. Since this modulating operation assures constant circulation of warmed air, temperatures are maintained evenly from floor to ceiling.

The Selective-Sequencer *exactly modulates* the heat supply to match the heat loss. Sketches at right show operation for an example heat loss of 35,000 BTU/hr.



3 elements on continuously—approximately 30,000 BTU/hr.



4th element on approximately 2 out of each five minutes.

Sequencer "plays" back and forth between 3 and 4 elements to maintain input of 35,000 BTU/hr.



3 elements on continuously.

Symbol of
SW
 Excellence

STEWART-WARNER

HEATING AND AIR CONDITIONING DIVISION • Dept. A-60, Lebanon, Indiana

only
this
much
more



buys this much difference



The little extra you pay for Purolator filters buys features and performance you just don't get in ordinary filters. The picture shows you the difference; here's what this difference means to you:

- ① Nozzles last longer because the Purolator Micronic element filters out abrasive particles as small as 0.0005 of an inch. A waste-type filter medium, no matter how much it's compressed, simply can't filter that fine, even when it's new.
- ② Filters last longer (a year or more without servicing) because every Purolator filter has over 200 square inches of filtering surface, enough to filter over 7,000

gallons of fuel oil without replacement.

- ③ No channeling or unloading, ever, because the Micronic element is precision made from a single pleated sheet of resin impregnated cellulose that resists water and acid, won't shrink, stretch, distort, flake or deteriorate.
- ④ No spillage, no air leaks. The depressed head on the Purolator housing eliminates spillage when servicing. The recessed gasket seal makes an airtight fitting between case and head.

And because Purolator filters filter better, longer, you make fewer trips, have fewer problems fulfilling your service contract. For full information, write to Dept. 2577.

*Filtration
For Every Known
Fluid*

PUROLATOR

PRODUCTS, INC.

RAHWAY, NEW JERSEY AND TORONTO, ONTARIO, CANADA

Luxaire

COOLING UNITS

...NOW IN FOREMOST DEMAND!



Advanced —
Round, Plenum
Cooling Coils



Compact —
Duct Cooling
Coils



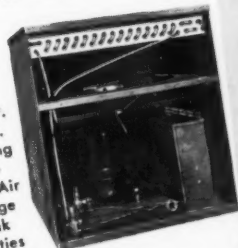
Versatile —
Counterflow
Cooling Coils



Air Handling
Blower-Coil
Units



3 H.P. and 5 H.P.
Condensing Units
— Top Discharge
— High Capacities
— Outdoor
Installation!



New! 2 H.P.
and 4 H.P.
Condensing
Units —
Upward Air
Discharge
— Peak
Capacities
— Outdoor
Installation!

Toast of the 1960 Cooling Season — the complete line of 2, 3, 4 and 5 Ton Luxaire Air Cooled Condensing Units and matching Cooling Coils!

Whatever type of installation — Upflow, Horizontal, Counterflow or Blower-Coil Unit — with Luxaire you have the right unit, at the right price, and with the right qualities to close the business!

The rugged, uncomplicated Luxaire Condensing Units provide top discharge and 16 gauge cabinets which are weather-protected with a heavy zinc coating. In the new 2 and 4 Ton sizes, air noise and nuisance are minimized by means of an internally housed propeller fan.

For companion heating, Luxaire Furnaces compliment Luxaire cooling in every respect. In most sizes only the substitution of a larger blower motor equips the standard furnace blower for cooling — another Luxaire saving, in addition to the industry's most respected, competitive prices!

No wonder the demand for Luxaire Cooling and Heating-Cooling Combinations is making history!

If you want to out-sell your competition, see your Luxaire jobber, today!



Upflow Gas
and Oil Furnaces
— Plenum
Cooling Coil



Counterflow
Gas and Oil
Furnaces —
Counterflow
Cooling Coil



Horizontal Gas and Oil Furnaces
— Duct Cooling Coil



Basement Gas
and Oil
Furnaces —
Plenum
Cooling Coil



Combination
Year 'Round
Units — Gas or
Oil Fired — Air
or Water Cooled

THE C. A. OLSEN MANUFACTURING COMPANY • • ELYRIA, OHIO

Luxaire

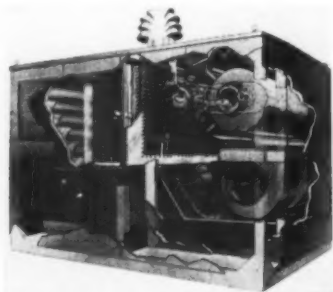
HEATING & AIR CONDITIONING UNITS

EQUIPMENT DEVELOPMENTS

The latest information on manufacturers' developments is presented here with brief summaries of the applications of these products. For additional product information which is available see this month's New Literature department

Roof Top Units

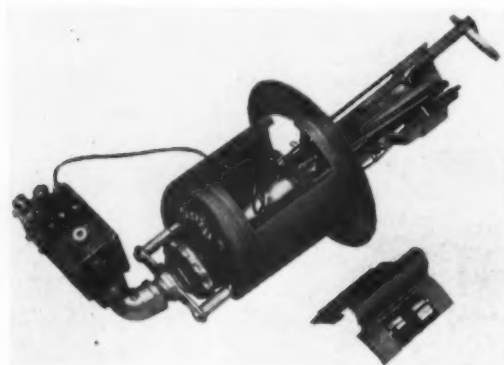
YR UNIT is completely enclosed in a weatherproofed housing. Key-locked doors offer access to the vestibule which houses the control panel, burner and access panels for servicing the component parts. Two sets of multilouver dampers control the air mixture which



can vary from 100 percent fresh air to 100 percent return air or any desired ratio between the two extremes, according to the manufacturer. The roof top unit is designed to accommodate any standard make of cooling equipment from 2 to 40 tons and uses either air or water-cooled condensing units—*Mammoth Furnace Co., 6425 Cambridge Ave., Minneapolis, Minnesota.*

Mixer Tube

TELESCOPING mixer tube makes it possible to accurately position the burner port and the flame



spreader in the proper relation to the combustion, and make the flame conform to the shape of the combustion chamber for maximum heat transfer, according to the

manufacturer. The firm now offers these telescoping mixer tubes with its atmospheric type 400-R series and blower type 450-P series gas conversion burners—*Roberts-Gordon Appliance Corp., 44 Central Ave., Buffalo 6, N.Y.*

Oil-Fired Furnaces

MONOCRIEF horizontal oil-fired furnace units can be installed in a low attic or crawl space, and feature increased air handling capacities for the addition of a summer air conditioning cooling coil. The three new models are the OY-90-E that has a 89,600 Btuh output



and is 20 in. high and 20 in. deep. No. OY-106-E has a 106,400 Btuh output and is 25 × 25 in. The OY-123-E model has 123,200 output and is 26 × 26 in. The OY-90-E will handle up to 3 tons of cooling and the OY-106-E up to 4 tons—*The Henry Furnace Co., Medina, Ohio.*

Warm Air Furnace Humidifier

HYDRO SPRAY humidifier operates on a principle of moisture projection by means of a series of nylon brushes which skim the surface of the water and throw



fine droplets into the air, according to the manufacturer. These droplets are then absorbed by the warm air rising from the furnace. The thermostatically controlled electric unit will operate with either gravity or forced air systems. It comes in two sizes. There is

—Standard B Series—

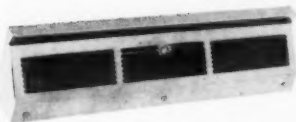
PERIMETER BASEBOARD DIFFUSERS AND RETURNS

The Newest Advance in

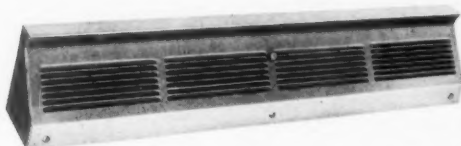
*Comfort Control for Combination
Heating and Cooling*

NEW

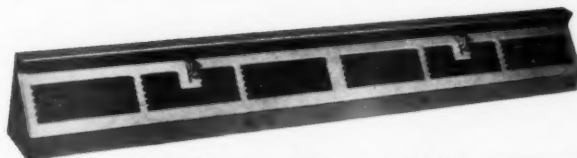
**LOW
PRICES**



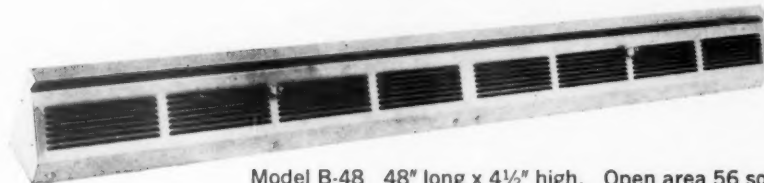
Model B-18 18" long x 4½" high. Open area 28 sq. in.



Model B-24 24" long x 4½" high. Open area 28 sq. in.



Model B-36 36" long x 4½" high. Open area 52 sq. in.



Model B-48 48" long x 4½" high. Open area 56 sq. in.

NOW

**READY FOR
FAST
DELIVERY**

**MATCHING
BASEBOARD RETURNS
AVAILABLE** For All of the Above Units

4 POPULAR SIZES . . . TO EXPEDITE YOUR INSTALLATIONS
Plus These Outstanding Features to Satisfy Your Customers

*Write for FREE Catalog and
Complete Details...*

- BUILT-IN DAMPER & REMOVABLE FACE Saves damper installation!
- HANDSOME LINES DURABLE BAKED FINISH!
- DESIGNED TO CUT INSTALLATION COST!
- ADJUSTABLE BOOT OPENING!
- VOLUME CONTROL For balancing system at face.



STANDARD Stamping & Perforating Co.

3137 W. 49th Place • Chicago 32, Illinois

A real self-drilling screw!

don't punch!
don't drill!
JUST DRIVE

P-K Tapits actually *drill* their way into light gage sheets when driven with a power driver! You eliminate hole drilling or punching with this newest idea in tapping screws from Parker-Kalon... speed sheet metal assemblies up to 50%.

What's more, P-K Tapits have a serrated washer, integral with the head, that minimizes stripping, by acting as a built-in brake.

Production line tests with millions of P-K Tapits prove these advantages you get with no other screw:

Unique drill point—Tapits start drilling immediately! The cuneiform (pyramid-type) point prevents walking, skidding or creeping!

Uniform Hex Head—Same size hex head on the entire range of Tapits from #6 to #10 means you need only one size driver socket. Sharp corners, well-filled driving faces reduce socket wear.

Advanced washer design—the serrated washer scientifically distributes driving stresses . . . minimizes stripping.

Sharp-crested threads—Holes drilled by P-K Tapits are exactly root diameter. Tapits hold far better because thread in engagement material mates perfectly.

Properly hardened—P-K's exclusive laboratory-controlled hardening and tempering process results in a uniformly hardened screw with a tough core.

USE P-K'S MAGNETIC DRIVER SOCKET FOR POWER DRIVING!

You need only one size driver socket to drive any P-K Tapits!

Get the P-K driver socket with a strong Alnico magnet that firmly holds the Tapits. Fits any 1/4" driver with adjustable clutch. Socket can be refaced to extend life.

PARKER-KALON®

originator of the tapping screw

PARKER-KALON, a division of General American Transportation Corporation, Clifton, New Jersey. Offices and warehouses in Chicago and Los Angeles.

P-K® TAPITS

Pat. Pending

TEST P-K TAPITS FOR YOURSELF! ASK YOUR DISTRIBUTOR FOR FREE SAMPLES

equipment developments

(Continued)

a choice of either the 10 brush or a 20 brush unit. The 10 brush unit is designed for furnaces with a 100,000 Btuh or less rating and the 20 brush unit for telescoping gas burner furnaces up to 200,000 Btuh rating—*Automatic Humidifier, Pelna Engineering Corp., Box 8242, Philadelphia 4.*

Hermetic Compressor

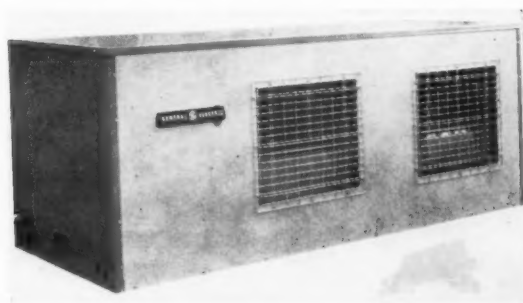
MODEL F-2556 is adaptable for room and residential air conditioning. It is only 11 $\frac{7}{8}$ in. high, 10 $\frac{13}{32}$ in. wide and 8 $\frac{1}{2}$ in. deep. The capacity of the compressor at normal rating condition is 16,300 Btuh.



The compressor can be furnished for either 230/60/1 or 208/60/1 service. It is available with two styles of mounting legs and with either top or side suction inlet. It also features an internal resilient mount and external mounts of either rubber cushions or springs to keep operating sound to a minimum—*York Division, Borg-Warner Corp., York, Pa.*

Split-System Air Conditioner

SIX TON split-system air conditioner line includes a weatherized outdoor remote unit, Model TA75B3, and an indoor air handling unit, Model TE72BH.

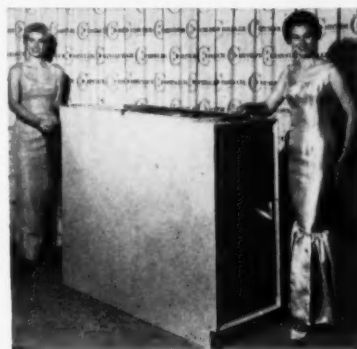


Heart of the outdoor section is a high-speed compressor (3450 rpm). Features include belt-driven, permanently lubricated ball-bearing blowers, and access controls with straight-in accessibility for field wiring

and maintenance. The fan is isolated from the compressor by a baffle. The outdoor section is shipped with a holding charge of F-22, and has built-in service valves bolted rigidly to the base. The companion air-handler unit has permanently lubricated ball-bearing blowers that are belt-driven by a four-pole, cushion mounted blower motor. A fan relay is furnished as standard equipment—*General Electric Co., Air Conditioning Dept., Troup Highway, Tyler, Texas.*

Gas-Fired Furnace

LOWBOY gas-fired furnace is available in three models, with 100,000 125,000 and 150,000 Btuh. It stands 45 in. high, and can be installed in less than 9 sq ft—with the manufacturer's summer air conditioner. The cooling coil may be added atop the lowboy to provide



central air conditioning. It fits flush with the furnace. According to the manufacturer, the unit features a 100 percent shut-off valve which stops furnace operation the moment the gas supply stops for any reason—*Chrysler Corp., Airtemp Div., P.O. Box 1037, Dayton 1, Ohio.*

Duct Liner Adhesive

TUFF-BONE No. 6 duct liner insulation adhesive is non-flammable in the wet stage and fire resistant when dry, according to the manufacturer. When brushed on metal, the adhesive produces an immediate tack and insulation can be promptly applied. Tack time for the adhesive is from 6 to 8 minutes. Coverage is approximately 150 sq ft per gallon—*Goodloe E. Moore, Inc., Danville, Illinois.*

Box Finger Brake

DI-ACRO box finger brake has material capacity to 16 gage steel and can be set up to perform as four different machines, according to the manufacturer. It can be a box finger brake by arranging the box fingers in proper combinations; a bar folder with all the box fingers in position; a radius former by moving the

Contractors
Report
Savings
up to 40%



Use Miracle NP555 to seal spiral conduit and fittings Efficiently and Economically

Miracle NP555 is a specially formulated duct sealer with excellent aging properties, resulting from use of non-oxidizing raw materials. NP555 has been custom made to effect substantial economies for you—savings of up to 40% have been reported from many sheet metal contractors who have used this sealer!

NP555 Duct Sealer has excellent shelf life, and rarely has to be thinned. It's a pleasure to work with NP555 because of the mild solvents it contains. NP555 Duct Sealer creates a tenacious bond to metal, and provides a sure permanent seal around seams. Use NP555 between all sections of spiral conduits and fittings — between risers and run-outs — between run-outs and air conditioning units.

ON REQUEST: Send today for additional information!



**MIRACLE ADHESIVES
CORPORATION**

250 Pettit Avenue, Bellmore, L. I., N. Y.

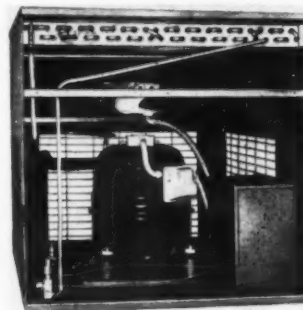
equipment developments

(Continued)

finger mount bar up to $\frac{1}{8}$ in. back from the center line; and an open end former by installing an open end finger accessory in place of the box fingers. The undercut box fingers and one inch clearance through top opening make it possible to form up to a $\frac{1}{2}$ in. lip or flange across the top or bottom of boxes and chassis, according to the manufacturer. Maximum bending angle in one operation is 135 degrees—O'Neil-Irwin Mfg. Co., 501 Eighth Ave., Lake City, Minn.

Air-Cooled Condensing Unit

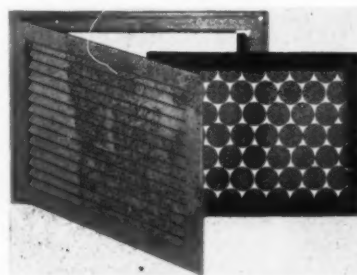
LUXAIRE condensing unit houses the compressor, condenser coil and condenser fan in one unit, and is designed for remote installation out-of-doors. Weatherproofing is achieved by constructing the cab-



inet of 16 gage, zinc-dipped steel, and all protective grilles are coated with a water-repellent vinyl. Unit provides a cooling capacity of 45,200 Btuh, according to the manufacturer—C. A. Olsen Mfg. Co., The C. A. Filbert St., Elyria, Ohio.

Grille-Filter Frame

AIR-MATE return air filter frames with hinged grilles are designed for room use on central air conditioning



units in new or existing homes, according to the manufacturer. Because of the hinge feature, dirty filters can be replaced in less than one minute with one hand operation. Frames are available in standard sizes from

for lasting winter comfort
in basementless homes...

new
J-LINE
by JANITROL
GAS-FIRED
COUNTER-FLOW
FURNACES



Presenting new...

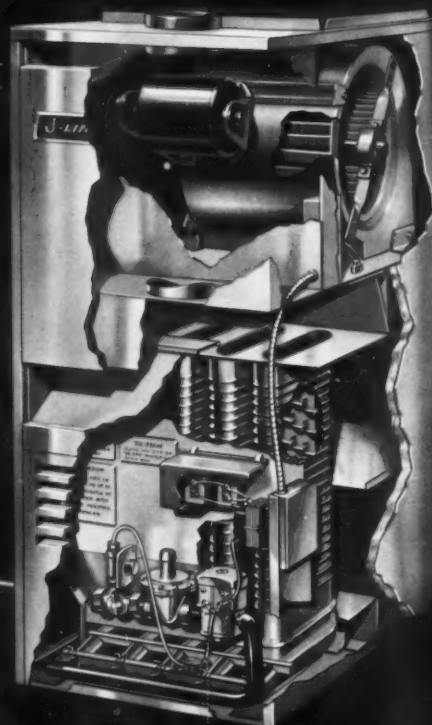
J-LINE

COUNTER-FLOW FURNACES

**PEAK PERFORMANCE
COMPETITIVELY PRICED**

NOW... every home can afford true, quality heating equipment! The new J-Line models are designed to a new concept in performance and value. This is made possible through savings in modern design (no fancy decorations), and high production tooling... at no sacrifice in quality.

The new J-Line has the many exclusive features and complaint-free engineering that have made the Janitrol name famous for over 50 years. Compare the features... compare the price. You'll find the J-Line has advantages not even offered in higher priced lines.



J-line furnaces are available in both counter-flow or upflow models. For extra air delivery, belt drive blowers may be ordered. Sizes from 65,000 to 120,000 Btu hr. meet most requirements for new homes, apartments or modernization.

THESE EXTRA QUALITY FEATURES ARE STANDARD!

Multi-Thermex Heat Exchanger—the famous Janitrol design that produces maximum heat transfer and tight-fisted fuel economy.

Ribbon-flame Burners—produce clean, sharp intense heat... burn with unusual quietness.

Two-pass air flow—a unique internal design that directs the air over the heat exchanger twice, for extra heating efficiency.

Trim Styling—crisp, modern cabinet design in warm two-tone colors that add richness to any home.

Compact, Space-Saving—requires less than four square feet of floor space.

Quiet—blowers are dynamically balanced and rubber-cushion supported for quiet air delivery.

Unidrive Blower—full capacity air delivery with lower power consumption—saves at least \$5.00 per year.

5-Year Lubricated Bearings—on blower motor save on maintenance.

Precision Controls—sensitive thermostat, pilot and operating controls are enclosed and protected from dirt.

Factory Fire-Tested—all models are wired, fired and checked at the factory under operating conditions.

WIRE COLLECT FOR FACTS

You owe it to yourself to get the full story on the amazing new J-Line—plus the fabulous Janitrol SELECT DEALER PROGRAM. This exclusive program gives you *action* in place of promises!

CALL WESTERN UNION NOW! ADDRESS YOUR COLLECT WIRE TO:

HARRY C. GURNEY, General Sales Manager
Janitrol Heating and Air Conditioning

A Division of Midland-Ross Corporation, Columbus 16, Ohio

Just say: "Rush me full details on the new J-Line and the Janitrol Select Dealer Program."

*The Profit Parade in the '60's
will be lead by Janitrol
Select Dealers*

**JANITROL HEATING
& AIR CONDITIONING**

A Division of Midland-Ross Corporation
Columbus 16, Ohio

A BOOMING BUSINESS WHERE PROFITS CAN BE DOUBLE

... that's the "Better Air" Market for

Electro-Klean

ELECTRONIC HOME AIR FILTER

Every reliable authority predicts the already fabulous public interest in "Better Air" will continue unabated. During 1950-59, that interest reflected itself in a 40% increase in warm air furnace sales; a 31% increase in central residential air conditioning sales; an increase of untold billions of dollars spent for air pollution control.

Even bigger boom in Electro-Klean Sales

The last four years of the same period saw an increase of 500% in sales of ELECTRO-KLEAN, the perfect "Better Air" companion-piece for forced air furnace and/or air conditioning systems. ELECTRO-KLEAN, in fact, offers decided opportunities for *double profit* in connection with the repair of older systems or the installation of new ones.

In performance, ELECTRO-KLEAN is outstanding... removing up to 90% of all airborne dirt and pollen from *all the air* inside a house! In price, ELECTRO-KLEAN retails for one-half of what do comparable units—requires no costly water or sewer connection, and does not necessitate special wiring circuits!



**Make 2 sales,
double your profit!**



Your opportunities for *double profit* with ELECTRO-KLEAN stem from the fact that it is quickly, easily installed in the return air duct of any forced air heating or cooling system. Acquainting a homeowner with the ELECTRO-KLEAN "Better Air" story, and then submitting an Alternate Proposal on every forced air system repair or installation job, will result in a sale of both ELECTRO-KLEAN and new heating/cooling system in a surprisingly high number of cases. And on every ELECTRO-KLEAN sale you make a *full profit*... there's no competitive price-cutting.

For stories about the successes others are enjoying with ELECTRO-KLEAN, contact your distributor. Or write: Mr. F. Robert Walker, Electro-Klean Sales Manager, American Air Filter.



American Air Filter

215 Central Ave., Louisville 8, Ky.

"BETTER AIR IS OUR BUSINESS"

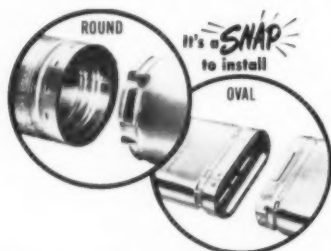
AMERIVENT

double-wall GAS VENT PIPE

NOW in 3" through 24" SIZES...



...with the famous
SNAP-LOCK joint



"it's a SNAP to install"

If you've been wondering how to vent those king-size gas boilers and furnaces in schools, hospitals, office buildings and hotels...here's the answer: specify **AMERIVENT**! Now available in 3" through 24" diameters.

Low-cost, light-weight **AMERIVENT** has full U-L approval in all sizes, conforms to AGA standards, meets requirements of FHA and VA as well as most local codes.

And of course the famous **AMERIVENT** SNAP-LOCK joint is featured in all sizes. This means faster... stronger... less expensive installations.

Whether you install a 20,000 BTU water heater or a giant 5,000,000 BTU gas furnace...your best vent is **AMERIVENT**!

AMERIVENT

A Division of American Metal Products Company, Inc.



PLANTS

[6100 Bandini Blvd., Los Angeles 22, California
1080 Kentucky St., Memphis 6, Tennessee

WAREHOUSES: Memphis • Dallas • Fort Lauderdale, Fla. • Cleveland • Atlanta • Wichita • Rockford, Ill.

Now Gas cooling --- --- --- with BRYANT!

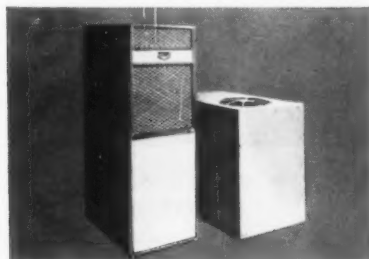
WATCH customers' favorable reactions when you explain the new Bryant Deluxe Gas Air Conditioner and its control over the weather. When they find out it's Gas . . . and that just one control switches from winter heating to summer air conditioning . . . you'll be doing more business than ever.

One of the big plus-benefits that helps sell this system is that the cooling unit can be added to the Bryant Gas furnace later on, and still the homeowner will enjoy the same easy-adjustment and economy advantages.

Customers have come to know that Gas is their most dependable home servant . . . in all kinds of weather. And that Gas is economical to install and to operate. There is nothing to wear out or make noise in a Gas flame.

Nothing heats, cools and conditions air like Gas!

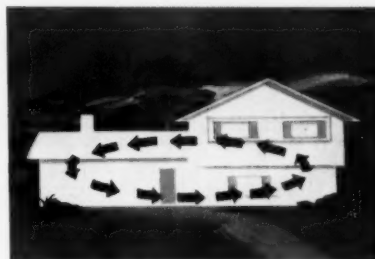
AMERICAN GAS ASSOCIATION




EASY INSTALLATION. The compact Bryant Gas furnace fits handily into closet-size floor space. The Bryant cooling unit goes outdoors. No water tower, no refrigerant piping. No high amperage wiring . . . because it's Gas!



EASY REMODELING. The Bryant furnace is specifically designed for add-on Gas cooling—an extra selling feature for your customers. Gas provides the economical way to have *whole-house, all year* air conditioning on both existing homes or new construction.



"FRESH-AIR" CIRCULATION, WINTER OR SUMMER. Bryant Gas heating provides an even flow of warm air, responding instantly to temperature changes. And Bryant Gas extracts pollen, and moisture. Both help you sell . . . *because they're Gas!*

ONLY GAS  **does so much more...for so much less!**

FROM FLOOR TO CEILING

MAINTAIN TEMPERATURE WITHIN

UNIT HEATERS

ARKLA *Humphrey*

Arkla-Humphrey Multi-Directional unit heaters are accepting congratulations now. At long last, industry's toughest heating problems have been solved by the Multi-Directional!

Tests show a 15.38% fuel saving with only a 3° temperature differential from floor to 18' ceiling! Smoke photo above shows you why. The Multi-Directional is the first and only unit heater to discharge heat straight down, out in front, or from either side, or any combination of these three! Pulling the heat from the ceiling with top mounted fans eliminate over-heated ceilings, too.

Write for complete information.

MANUFACTURED BY
GENERAL OFFICES

ARKLA

AIR CONDITIONING CORPORATION
SHANNON BUILDING LITTLE ROCK, ARKANSAS

DISTINCTIVE CONCEPTS in roofing with FOLLANSBEE TERNE



The striking roof effects that can be created with Follansbee Terne give any house a distinctive beauty not possible with ordinary roofing materials.

Follansbee Terne is metal roofing at its best—used by architects because it gives them freedom of design and an opportunity to make the roof an important part of the exterior effect—used by sheet metal contractors because it is easy to work with and forms a perfect soldered joint.

Builders recognize the outstanding sales features of a Follansbee Terne roof immediately. In addition to its beauty, a Terne roof will last a lifetime. It can be painted any color, any time; when painted white or a light color, a Terne roof will reflect most of the sun's heat.

There are other facts about Follansbee Terne that we would like to tell you about. Why not write for them today?



FOLLANSBEE STEEL CORPORATION

Follansbee, West Virginia



*how many
"tons" can
a "horsepower" carry?*

Or how many "cubic feet" make a "ton"?

Sooner or later, questions like these will come up when you use such terms to describe the cooling capacity of unitary* air-conditioning equipment. When your prospect starts asking them, his confusion may lose you an important sale.

To avoid this, the Unitary Section of the ARI has set up industry-approved standards. Participating manufacturers now rate the cooling capacity of all unitary equipment in Btu per hour. This rated capacity is subject to checking and verification by an independent testing laboratory. A unit, selected at random from a participating manufacturer's stock, is tested under adverse conditions with emphasis on wilting heat and high humidity. Any model failing to deliver rated capacity must be brought up to standard or be withdrawn from sale.

The ARI Seal of Certification assures you of equipment you can count on—equipment that makes it easier for you on any job. It is easier to maintain, too. The dependability of this equipment pays off in fewer complaints, fewer service calls, fewer repairs and replacements, more profits for you.

To avoid confusion when discussing cooling capacity with prospects, use Btu per hour—and *prove* the capacity of your equipment by pointing to its ARI Seal of Certification.

For free explanatory booklet and Directory of participating manufacturers, write to: Chief Engineer, Dept C-603, Air-Conditioning and Refrigeration Institute, 1346 Connecticut Avenue, N.W., Washington, D. C.

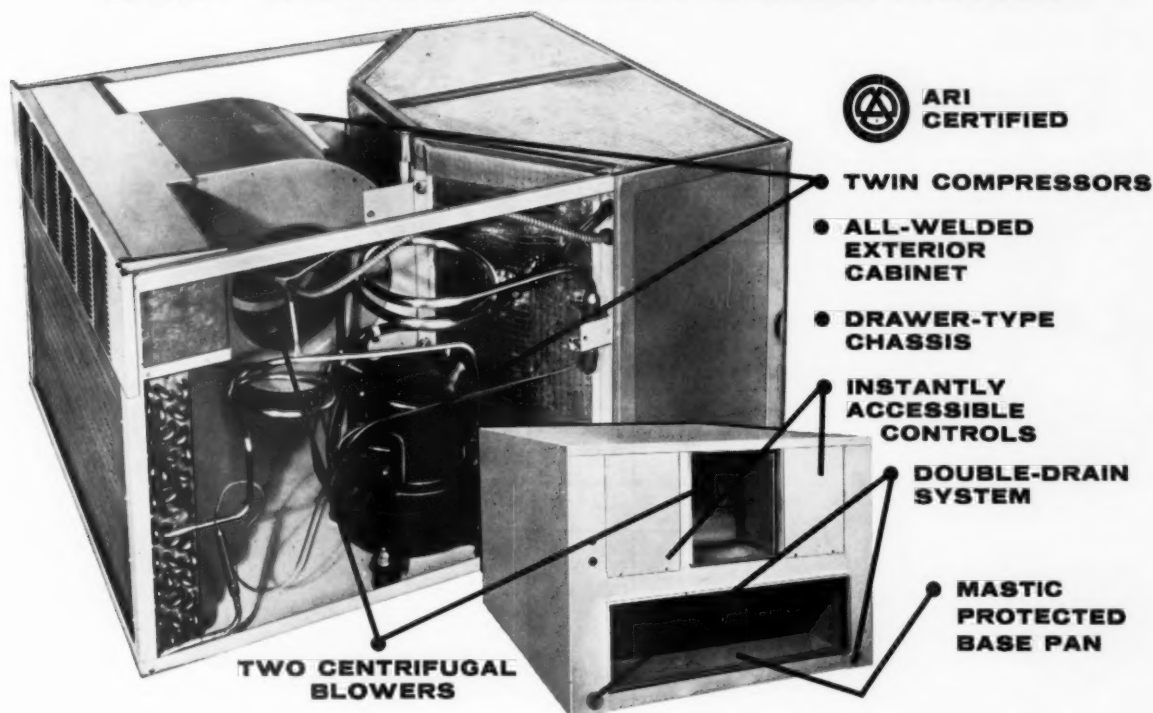
*"Unitary" air conditioners included in this program: all packaged air conditioners, whether single units or two-piece units (called "split" systems) up to 135,000 Btu per hour in capacity, but not including room air conditioners. ARI Standard 210-58 for electrically-driven equipment; ARI Standard 250-58 for heat-powered equipment.



*Here's Built-In Quality
That Stops Profit-Killing Call-Backs!*

NEW **Coolerator 4H.P.**

SELF-CONTAINED AIR CONDITIONER



**ARI
CERTIFIED**

TWIN COMPRESSORS

● **ALL-WELDED
EXTERIOR
CABINET**

● **DRAWER-TYPE
CHASSIS**

● **INSTANTLY
ACCESSIBLE
CONTROLS**

● **DOUBLE-DRAIN
SYSTEM**

● **MASTIC
PROTECTED
BASE PAN**

**TWO CENTRIFUGAL
BLOWERS**

Exclusive 4-Point Program Provides Bonus Profits on Every Sale!

1. **QUALITY PRODUCTS!**
Every unit rigorously performance-tested.
2. **EXCLUSIVE FEATURES THAT SELL!** Lectrofilter[®]*, the amazing low-cost electrostatic filter, Permalife finish, and others!
3. **DIRECT FROM FACTORY PURCHASING!** Plus the backing of a nation-wide warehouse and service system!
4. **PROTECTED TERRITORIES!** There's no "next-door" franchising by Coolerator!

*Optional Accessory

You keep more of the profits you make with Coolerator. They aren't eaten away by excessive service and "adjustments." Proof? *Actual service records show Coolerator equipment ranks at the top of the industry for dependable performance.* In self-contained units, remotes or heat pumps, you can't sell more service-free comfort than Coolerator. So add to your profits two ways: with (1) Coolerator quality and (2) Coolerator's exclusive Bonus Profit Plan. Mail the coupon below today!

COOLERATOR DIVISION

Albion, Michigan
McGraw-Edison Company

PRODUCTS OF



In Canada: 574 Fourth Line, Oakville, Ont.



COOLERATOR DIVISION, DEPT. DC-6
McGraw-Edison Company, Albion, Michigan

Please send complete information on Coolerator Central Air Conditioners and the Bonus Profit Plan.

Name

Company

Street

City State

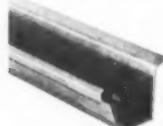
ONE MAN PRODUCES 9000 FEET OF GUTTER PER HOUR...

WITH
THE **WELTY-WAY AUTOMATIC!**

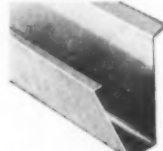
If you can plan
your GUTTER
DESIGN on paper
... **WELTY-WAY**
CAN TAILOR A
MACHINE TO
MAKE IT!



LOW BACK "K" GUTTER
4", 5", or 6" Girth,
3/4" Bottom



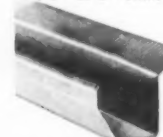
HIGH BACK "K" GUTTER
4", 5", or 6" Girth,
2" Bottom, Special



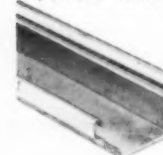
FACIA HIGH BACK GUTTER
Girth from 10"-15"



**STRAIGHT LINE HIGH
BACK GUTTER**
4", 5" or 6" Girths



**DUTCHMAN HIGH
BACK GUTTER**
4", 5" or 6" Girths



SPECIAL TYPE GUTTER

Imagine turning out 2½ feet of gutter per second in nearly any length... cut to the exact inch... while slashing overhead costs and boosting customer service. **WELTY-WAY HI-SPEED CONTINUOUS GUTTER MACHINES** do! Precision engineered units reduce basic material costs while utilizing warehouse space.

Save working capital when you buy in carload lots of galvanized iron, aluminum, copper and stainless steel. Prepare and store gutter for use on a moment's notice. **WELTY-WAY** takes up slack time and saves essential storage space. **WELTY-WAY** pays for itself in hours!



4 HI-SPEED AUTOMATIC MODELS

	Automatic HI-SPEED MODEL WA	Automatic HI-SPEED MODEL WB	Automatic HI-SPEED MODEL WC	Automatic HI-SPEED MODEL WD
CAPACITIES:	All models handle 26, 28, 29, 30 ga. galvanized iron, aluminum, copper and stainless steel.			
FUNCTION:	Makes Low Back Gutter	Makes Low Back and High Back Gutter	Makes Low Back Gutter	Makes Low Back and High Back Gutter
HEIGHT:	47"	47"	47"	47"
DRIVE:	3 h.p. motor, 220/440 3 phase	5 h.p. motor, 220/440 3 phase	5 h.p. motor, 220/440 3 phase	7½ h.p. motor, 220/440 3 phase
MAXIMUM SPEED:	6000 ft./hr.	6000 ft./hr.	9000 ft./hr.	9000 ft./hr.
WIDTH:	18½"	18½"	18½"	18½"
LENGTH:	17 ft. from end of feeding table to the end of gutter machine.			
OVERALL LENGTH:	21 ft. from the cradle to the end of the feed-out table.			

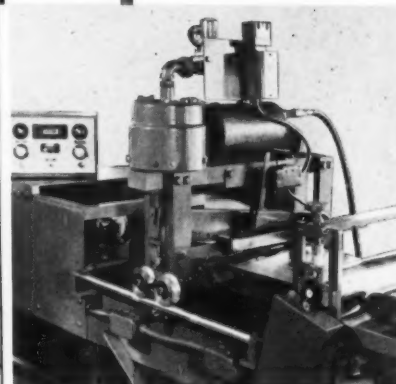
WELTY-WAY manufactures Continuous gutter machines to fit any sized business. Send for full information on the Hi-Speed Continuous Gutter Machine and the Portable Gutter Machine.

ATTACH 200-300 COLLARS PER HOUR... WITHOUT PREFORMING!

Stabilize collars to boots and fittings from 4" to 8". One man does three jobs at the same time... (1) expands boot or fitting (2) grooves both collar and boot or fitting and (3) stabilizes collar to boot. Collar dies may be changed in nearly 10 minutes.



Welty-Way AMERICA'S ONLY HI-SPEED Automatic GUTTER MACHINE!



Exclusive air operated **FLYING SHEAR** automatically snips metal where you want it with **HI-SPEED**, uniform precision. **ELECTRONIC EYE** automatically tells the flying shear the number of feet and inches of metal to be cut. You can change the length of gutter to be cut while the machine is operating. Capacities between 10-100 feet can be set with performance-satisfaction.

MAIL TODAY!

WELTY-WAY PRODUCTS, INC.
714 1st Avenue N.W.
Cedar Rapids, Iowa

AAI

Please send full information on the **WELTY-WAY** products checked below:

- ☐ Hi-Speed Automatic Machine ☐ Portable Gutter Machine
☐ Hi-Speed Machine ☐ Collar Machine

Name

Address

equipment developments

(Continued)

10 × 10 in. to 36 × 36 in.—Dry Mfg. Co., Inc., P.O. Box 797, Winters, Texas.

Hole Drilling Tapping Screw

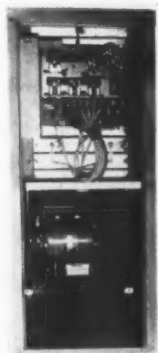
"TAPITS" drills its own hole, forms its own thread, and has an integral washer with a serrated face that acts as a built-in brake to minimize stripping and spin-



ning. The screw is designed to be used with a quarter-inch power screw driver with adjustable clutch. Only one size socket is needed, since all sizes of the screw have the same size hex head—Parker-Kalon Div. of General American Transportation Corp., Clifton, N.J.

Electric Furnace-Heat Pumps

ELECTRIC warm air furnaces, packaged heat pumps, and split-system heat pumps for residential and light commercial applications. The electric furnace is a factory assembled and wired unit of 82,000 Btuh



capacity. Reconnection of electric hookup can reduce the capacity by steps down to 41,000 Btuh. Two blower capacities are available to handle up to 5 tons of add-on air conditioning. Both heat pumps provide for completely automatic heating and cooling by a single thermostat control—Air Conditioning Div., American Radiator & Standard Sanitary Corp., 40 W. 40th St., New York 18.

For Commercial Installations

"Fabrikated"®

WALL GRILLES

MADE TO ORDER
IN SPECIAL
LARGE SIZES

No. 311D
WALL
GRILLE

Independent famous "Fabrikated" construction makes these grilles especially adaptable to large sizes for schools, hospitals, hotels, and other commercial buildings.

CHECK THESE FEATURES:

- ✓ Vertical or horizontal bars strengthened by interlocking cross bars; no vibration.
- ✓ Tamper-proof. Changes in air distribution cannot be made by unauthorized persons.
- ✓ Mesh ($\frac{3}{4}$ x $1\frac{1}{4}$) filters 72% of free area yet darkens the duct and reduces highlights from back of the grille.
- ✓ 14 gauge steel solid bars $\frac{1}{2}$ " deep—strong enough to be "kick-proof"—(a must for schools).
- ✓ All bars made from round edge stock. No sharp edges. (A must for schools).
- ✓ The only grille for taking abuse in school gyms and hospital psychopathic wards.

These grilles are unusually rigid-strong and exceedingly resistant to impact—the best that money can buy. We make them in any size. Send your specifications. We are prepared to give immediate service because we always stock grille parts for any size.

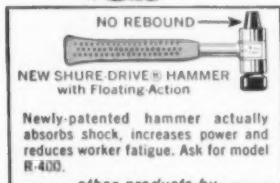
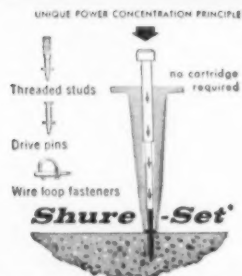


THE INDEPENDENT REGISTER CO.

3747 E. 93rd STREET • CLEVELAND, OHIO

Today's Top Contractors Use **SHURE-SET**

FOR MORE ECONOMICAL FASTENING TO CONCRETE



other products by

Ramset® Fastening System

OLIN MATHIESON WINCHESTER-WESTERN DIVISION
306-F Winchester Ave. • New Haven 4, Conn.

When a job calls for light-duty fastening into concrete or block, Shure-Set is the ideal choice! This hammer-powered tool (no cartridge required) is designed to pinpoint hammer strokes on the head of special austempered fasteners, setting them permanently in hard materials up to 15 times faster than out-moded methods.

There's a Shure-Set fastener to meet every need of the plumbing and heating contractor who wants to save time and money while getting the most dependable fastenings on pipe hangers, duct straps, tie-downs, control boxes, thermostatic systems and a host of day-to-day applications. Write today for details, or call your Shure-Set dealer (under "Tools" in the Yellow Pages).

equipment developments

(Continued)

Plastic Welder

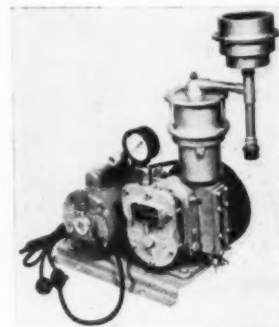
No. 10-10 utility plastic welding torch is constructed of heavy duty stainless steel and has a reinforced fibre glass handle that is highly resistant to breakage and always cool when the welder is in use. It is 11½ in. long with tip, and weighs 11 oz.



A 350 watt, 110 volt heating element develops top temperatures quickly and is resistant to breakage, according to the manufacturer. The welder will not burn out when exposed to heat without the normally required cooling air flow—Laramy Products Co., Cohasset, Mass.

Portable Vacuum Pumps

MODELS KC-2R and KC-3R are two portable high vacuum pumps that have pumping speeds of 2 cfm and 3 cfm in free air, an ultimate vacuum of 5 microns of mercury, total pressure, and will service up to 10 ton air conditioning and refrigeration systems, according to the manufac-

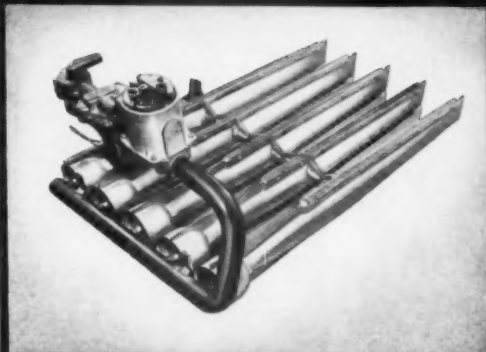


turer. An increased oil capacity to 16 oz., a large oil separation and recovery unit, and a fume arrestor protected by an oil drop-out trap permits longer pumping cycles and the

**Think
Value**



**Know
Value***



**Sell
Value**



*Straight, narrow slots of CONTROL-A-FLAME GRID on Fraser-Johnston's new burners, hold a short, blue flame, confining it to the burner head. They eliminate popping, flashback and pilot outage. Their non-corrugated surface is lint free. Ignited by one pilot, the flames join at the cross-overs instead of jumping. **VALUE: DECADES OF SILENT, TROUBLE FREE BURNING.** Burners can be used with natural, liquified petroleum or manufactured gas.

Fraser-Johnston

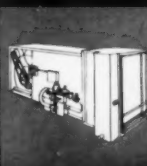
1900-17th STREET, SAN FRANCISCO, CALIFORNIA
"OVER A QUARTER CENTURY OF LEADERSHIP"



Upflow Furnaces
65,000 to 250,000
BTU Hr. Input



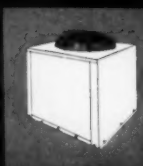
Downflow Furnaces
65,000 to 250,000
BTU Hr. Input



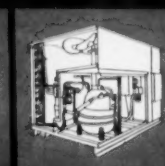
Horizontal Furnaces
70,000 to 150,000
BTU Hr. Input



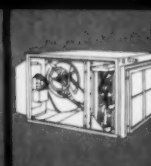
Matching Cooling
Coils for easy add-on
All Furnaces



Air Cooled and
Water Cooled
Condensing Units



Heat Pumps & Air
Conditioning Units
self contained & remote



Air Handling Units

TAP  the best plumbing,
heating and air conditioning jobs
around! Survey  all bidding
opportunities...then set your sights
 on the ones that can do
you most good.  All you
need is the advance information
 you get in daily

Dodge Reports!!

Dodge
F. W. DODGE

Reports
HELP
PLUMBING AND HEATING
CONTRACTORS GET MORE BUSINESS

If you do business in the
new construction field—

**SEND FOR
THIS FREE
BOOKLET**



F. W. Dodge Corporation, Construction News Division
119 West 40th Street, New York 18, N. Y., Dept. AA60

Send me the booklet: "How Subcontractors Get More Work in New Construction" and let me see some typical Dodge Reports. I am interested in the general markets checked below.

- ☐ House Construction ☐ General Building
☐ Engineering Projects (Heavy Construction)

Area _____

Name _____

Company _____

Address _____

City _____

Zone _____

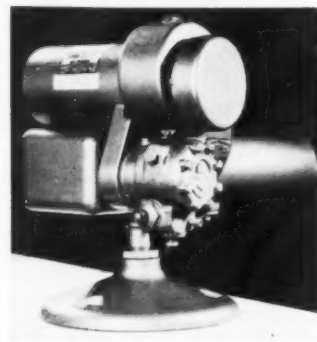
State _____

equipment developments (Continued)

use of these pumps where oil fumes would be objectionable—*Airserco Mfg. Co.*, 435 Melwood Ave., Pittsburgh 13.

Conversion Oil Burner

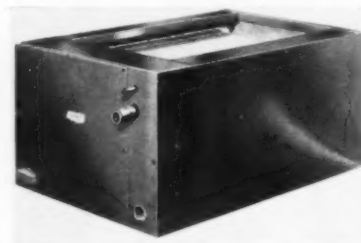
LOW-GALLONAGE conversion burner will operate at 10 to 12 percent CO₂ with no smoke. Provides efficient burning rates of 0.50 to 0.85 gph. The burner has a new compact hous-



ing, constant electric ignition, either single or two-stage fuel pump, easily removable gun assembly, pedestal mount and nozzle with filter. Thermostat, stack control and limit control are standard equipment—*Lennox Industries, Inc.*, 200 S. 12th Ave., Marshalltown, Ia.

Cooling Coil

NOMINAL 2 TON coil is designed to be installed under a counterflow furnace. It is completely insulated to prevent

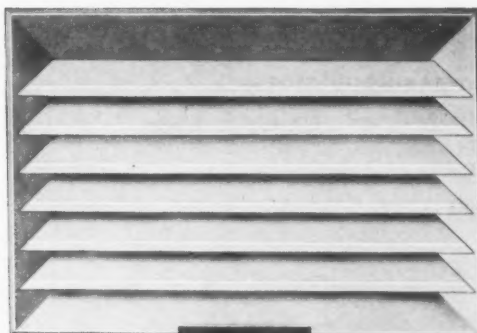


"sweating" and to hush air noise. Coil fins have a rippled edge and are bonded to the refrigerant tubes in a new and improved manner, according

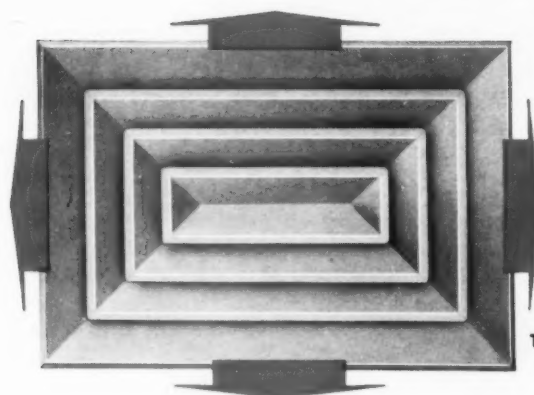
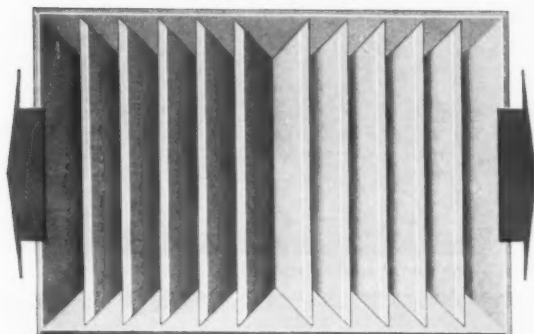


The extreme flexibility of
Type M Multi-Pattern Diffusers
means custom-selected air distribution

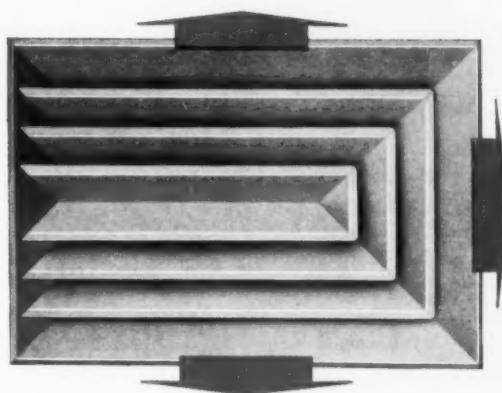
TYPE M 1-WAY BLOW



TYPE M 2-WAY BLOW



TYPE M 4-WAY BLOW



TYPE M 3-WAY BLOW

Ideal conditions for the placement of ceiling diffusers do not always exist. Walls, partitions, exposed beams, supporting columns, light fixtures . . . big offices, small offices, corridors . . . are some of the factors that can contribute to the problem of correctly selecting and locating air distribution outlets.

With Tuttle & Bailey Type M Diffusers . . . you can select units that will distribute air in a one-, two-, three-, or four-way pattern . . . and you can select from a wide range of square and rectangular sizes. An added advantage . . . if and when requirements change in the conditioned space, it is an easy matter to install a core with a different air pattern arrangement.

T & B Type M Diffusers are attractively styled and can be furnished with four margin styles . . . beveled, flat, flush, or drop-collar . . . designed for various types of ceiling mountings.

For complete details, see your nearest Tuttle & Bailey Representative or write us direct.

TUTTLE & BAILEY

division of Allied Thermal Corp.  New Britain, Connecticut
Tuttle & Bailey Pacific, Incorporated, City of Industry, California

equipment developments

(Continued)

to the manufacturer. Expansion valve and condensate eliminator are integral parts of the unit—Lennox Industries, Inc., 200 S. 12th Ave., Marshalltown, Ia.

Damper Regulator

AIR-FLOW damper regulator designed for installations in exposed areas where modern appearance and ease of adjustment are of prime importance. It can be installed on any new



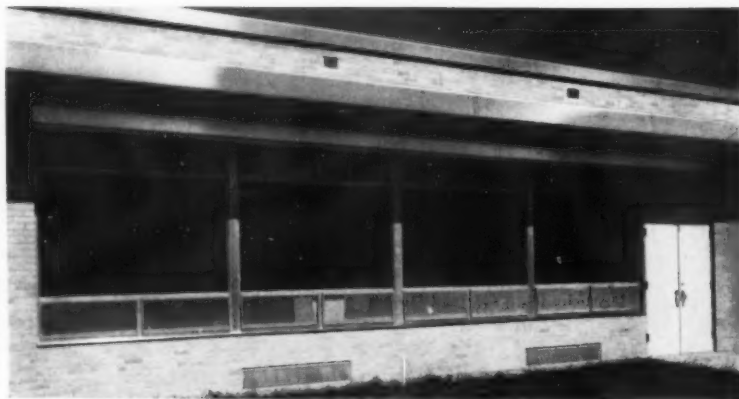
or existing system, and the regulator shows the exact position of the damper. (No tools are required for adjustment.) Turned by hand, the damper locks into position when the twisting knob is released. It's made of styrene—Duro-Dyne Corp., Route 110, Farmingdale, N.Y.

Remote Air Conditioners

TWO REMOTE air conditioning systems with nominal capacities of 10 and 15 tons are applicable in large commercial installations or in industrial plants. The outdoor sections, the condensing units, include high-capacity condenser coils located on each side of the unit. The coils are finned-tube-type with aluminum fins mechanically bonded to seamless copper tubing and are air-cooled by separate blower. Units are equipped with twin compressor systems, each with a matching fan and coil unit, that can be turned on individually to give half-capacity operation for light cooling loads. A built-in time delay relay in these systems permits step starting to meet electric utilities'

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New school means more



Coping is an ideal application for corrosion-resistant stainless steel.



Deep gutter and downspouts of stainless steel should last the life of this school building.

With school populations zooming all over the country, there's scarcely a community that isn't in the throes of a building program. In 1959, almost \$3¼ billion was spent on new school construction, and the figure is expected to climb another \$150 million this year. All this adds up to unlimited opportunities for you to find new stainless steel business.

Literally dozens of applications exist in school construction where stainless steel is the least expensive material that can be used. Besides well-known uses in kitchens and cafeterias, there are possibilities for gutters, downspouts, column covers, flashing, coping, and other types of trim.

SALES POINTS

In talking with school boards and architects about specifying stainless steel, you can point out that stainless steel is essentially immune to atmospheric corrosion . . . that it should never need replacement . . . that it practically maintains itself. Where stainless is within reach of active youngsters, it can be expected to resist most abuse.

For helpful information on how to fabricate stainless steel, call your nearby Armco Distributor for a copy of our new booklet, "Stainless Fabricating Tips." His name is listed on the next page. Armco Steel Corporation, 1600 Curtis Street, Middletown, Ohio.

construction stainless business

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	Toronto, Ontario Firth-Brown Steels, Ltd. (AB)
	Vancouver, B. C. Esco, Ltd. (AB)

equipment developments (Continued)

starting limitations in certain areas—
Westinghouse Electric Corp., Box 2278, Pittsburgh.

Gas-Fired Furnace

FOUR SIZES of gas-fired highboy furnaces have input capacities of 70,000, 80,000, 100,000 and 120,000 Btuh. Furnaces are 51 in. high, 26 in. deep, and vary in width from 14 to about



20 in. They can be used in a year 'round air conditioning system by coupling them with a self-contained cooling and dehumidifying unit. Direct-drive blowers are adjustable to three speeds by a wiring change on the tap-wound motor to vary air quantity to the needs of the house—*Carrier Corp., Carrier Parkway, Syracuse 1.*

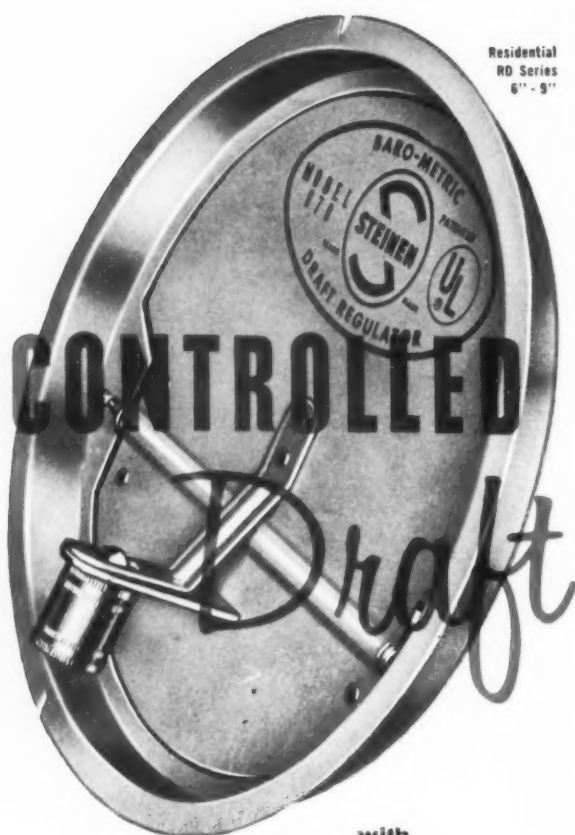
Air Conditioners

MODELS AP3-36 AND AP3-47 have capacities of 36,000 and 47,000 Btuh respectively. Both units are air-cooled and designed for operation at ambient temperatures in excess of 125 F, according to the manufacturer. A panel arrangement is used to allow the supply air to be discharged either from the front or from the side of the unit, and the return air to be taken from either the opposite side or the front. Units are 25 in. high, 40 in. wide and 44½ in. long—*The Siegler Corp., 900 Wilson Ave., Centralia, Ill.*

ARMCO STEEL



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STEINEN Draft Regulators

Steinen Draft Regulators are also available in Commercial 12" - 32", Duo-Check for coal and for gas-fired and fuel-less Incinerators. Steinen also manufactures Oil Burner Nozzles, Electrodes and Heating Accessories.

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new literature . . .

Evacuating Pumps for Service Work

EVACUATION OF REFRIGERATION EQUIPMENT used in summer air conditioning applications requires a thorough understanding of the use of vacuum pumps. This subject is treated in "Review of Vacuum for Service Engineers," by Harold G. Saunders and Emmett C. Williams.

The book explains in a non-technical manner the fundamentals of vacuum. It contains seven chapters, illustrated with 35 charts, photographs and diagrams.

Reasons why it is necessary to "pull a vacuum" on refrigeration equipment before charging the system are carefully explained. Procedures that have proven most effective are described and illustrated to emphasize the essential steps.

Other features relate to the use of instruments for servicing and diagnosing refrigeration troubles. Some of the subjects covered include: Procedure for Dehydrating, Degassing and Leak Testing in the Field; Distinguishing by Gage Readings the Difference Between a Leak and Vaporization; Gages for Field Service Work; Maintenance of Vacuum Pumps; and Vacuum Gages for Field Service Work.

The plastic bound book is 5½ × 8½ inches, is priced at \$4—*Airserco Mfg. Co., 435 Melwood Ave., Pittsburgh 13.*

Air Conditioning Supplies

SPRING AND SUMMER EDITION of Air Conditioning and Refrigeration Equipment Catalog, 306 pages, presents current net dealer prices as well as ordering instructions. Equipment specifications, dimensions and capacities are listed for heavy duty and fan motors, air filters, refrigerants, tubing, electrical testing tools, instruments, condensing units, replacement parts for compressors, refrigeration system controls, hand tools, service kits and air conditioning accessories.

Also included are eight pages of engineering data and two pages of sample wiring diagrams.

Copies of the catalog may be obtained from any of the wholesaler's seven branches located in Terre Haute, Ind. (41 Wabash); Mt. Vernon, Ill. (South end of 28th St.); Paducah, Ky. (910 Broadway); Memphis, Tenn. (747 Poplar St.); Birmingham, Ala. (210 18th St., S.); Huntsville, Ala. (1117 Vanderbilt Dr.); New Orleans, La. (7900 Earhart Blvd.) and at the main office—*Budlock Refrigeration Supply Co., Inc., 434 Carpenter St., Evansville, Ind.*

Heating, Air Conditioning Products

BULLETIN B-5529 (24 pages) describes heating, air conditioning, air and material handling and other



The more crimping you have to do, the more satisfied you will be with Weirkote Zinc-Coated Steel. There's no peeling, no chipping, no flaking. Work it to the limits of the steel base itself and the zinc coating remains intact assuring you of the complete corrosion protection that only zinc can give. Weirkote is made that way—to retain its protective zinc coating no matter how tough the forming and bending operations. A Weirton representative will gladly supply full information on Weirkote—another fine product of the Weirton Steel Company, Weirton, West Virginia.

WEIRTON STEEL

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Weirkote will also be available in 1961 from National's Midwest Steel Division, Portage, Indiana.

NEW VICTOR GAS VICTOR OIL



NEW STYLING, NEW FEATURES... NEW FIN-DELUXE

Electronic modulation is available with the all new Victorgas furnace. Victor's new ultra-sensitive "thermistor" control detects a one-tenth degree change in temperature, automatically adjusts the flame to an infinite number of sizes to meet the exact heating requirements.

Dual speed blower gives maximum heating comfort and eliminates cold drafts. Available with either Victor gas or oil-fired furnaces, it runs at low speed when burner first comes on and bonnet temperature is low. As bonnet temperature increases it operates at high speed.



Fuel saving fins offer real sales ammunition. With Victor's table top demonstrator you can prove to your customers that Victor heat radiating fins provide 30% savings in fuel economy! No other furnace offers this advantage.

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new literature

(Continued)

products. Capacities, dimensions and ratings are included—*American-Standard Industrial Div., Detroit.*

Ducts and Fittings

SIMPLIFIED PRACTICE Recommendation R207-60, "Pipes, Ducts and Fittings for Warm Air Heating and Air Conditioning Systems," (15 cents) is designed to help reduce waste by recommending certain sizes and kinds of prefabricated ducts and fittings for regular stock purposes and eliminating superfluous varieties. The adoption and use of a simplified practice recommendation is voluntary. This recommendation was compiled by the Commodity Standards Div., Office of Technical Services, U. S. Department of Commerce, in cooperation with producers, distributors and users of duct and fittings. It covers furnace pipe, elbows, angles and accessories; plenum chambers, duct and accessories; wall stack and accessories; takeoffs; register boxes, register boots and stack-heads; stack boots; gravity and miscellaneous fittings—*Superintendent of Documents, U. S. Government Printing Office, Washington 25.*

Industrial Louvers

BULLETIN IL-1 describes industrial louvers featuring curved return blade designed to provide more efficient air intake as well as weather protection. Louvers may be fixed, or may be operated by hand or motor—*Bowman Steel Corp., Box 2129, Pittsburgh 30.*

Motor Blowers

CATALOG describes Series R, S and T motor blowers for furnaces and air conditioning units. Illustrations include product photographs as well as dimensional diagrams. Tables list capacities and applications—*Viking Air Products Div., Lau Blower Co., 5601 Walworth Ave., Cleveland 2.*

"We're selling twice as many
gas conversion jobs since
we switched to

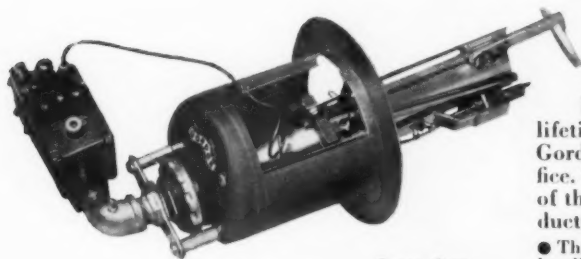
Roberts-Gordon"

"That's right, Bill — nothing
beats quality
at the right price!"



ROBERTS-GORDON UPSHOT GAS CONVERSION BURNERS

Ideal for converting from coal to gas, Roberts-Gordon No. 84 Conversion Burners are easy to sell and install. Only the Roberts-Gordon "Spreader-Flame" burner, with its famous secondary Air Seal, offers complete combustion air control assuring maximum efficiency. Exact flow of gas desired is quickly set with unique "Iris Orifice". Fast installation is assured by adjustable Telescoping Mixer. Up to 900 BTU/Hr. input. Model 302-21 rated up to 400,000 BTU/Hr. input.



Burner shown
with cover
removed

ROBERTS-GORDON INSHOT GAS CONVERSION BURNERS

The Roberts-Gordon 400-R burner is designed for converting oil furnaces and boilers to gas. Quality built for quiet, efficient, economical performance and lifetime dependability. Features include famous Roberts-Gordon "Spreader-Flame" burner and adjustable Iris Orifice. The Telescoping Mixer simplifies exact positioning of the burner for more efficient combustion. Flanged air ducts permit easy mounting. Up to 275,000 BTU/Hr. input.

● The new Roberts-Gordon 450-P Power Burner will more effectively handle your oil to gas conversions involving restricted combustion chambers. Perfect for counterflow applications where insufficient natural draft is available, or where more capacity is needed. Up to 500,000 BTU/Hr. input.

● Roberts-Gordon offers a Domestic or Industrial Gas Conversion Burner to fit almost every installation need. Wide range of sizes and capacities all with top quality features!



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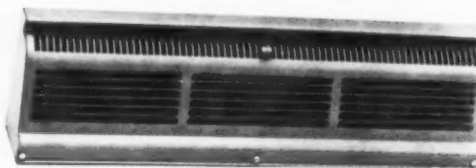
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U.S. No. 256 AIR CONDITIONING REGISTERS

have led the field of multiple valve A.C. Registers. They provide Complete, Positive 4-way Air-Flow Control for Heating and Cooling Installations. A SUPERB QUALITY UNEQUALLED by Any Other Lines. NON-VISION, LOWEST RESISTANCE.

PROJECT HEADLINER



U.S. No. 1018 BASE DIFFUSER

When you're on a project Contract where Capacity, Compactness, and Diffusion with Economy are as important as the Distribution of Air Flow, the No. 1018 U.S. Base Diffuser will assist in securing the Contract. It's only 18" long. Gives you maximum free area for such a short diffuser.

MORE PERIMETER POWER



U.S. Nos. 1024 and 1048 U.S. BASE DIFFUSERS,

recently improved, by adding additional oblong openings. U.S. No. 1000 U.S. Base Diffusers now lead the field in free area, beauty, and power. Combining of 2 ft. and 4 ft. lengths with special U.S. Connectors will make any desired longer lengths. U.S. No. 2000 Perimeter Base Intakes match the design of No. 1000 BASE DIFFUSERS.

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"A" for 1960



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Cost Control

"HOW TO BUILD PROFITS by Controlling Costs" (48 pages) is written from the point of view of the small businessman. Using the case history approach, the booklet describes business problems experienced by a typical small business owner and offers suggestions for controlling costs. It includes a step-by-step examination of record keeping, explains how to analyze figures, and discusses the use of ratios as a means of comparing performance. Featured is a five year chart for comparing performance which enables a businessman to see the progress and direction of his business. Copies are priced at \$1—Dun & Bradstreet, Inc., Publications Div., P. O. Box 803, Church Street Station, New York 8.

Portable Power Tools

PORTABLE POWER TOOL BROCHURE includes information on polishers, $\frac{1}{4}$ and $\frac{3}{8}$ in. drills, belt sanders, bench grinders and cutting tools. Each tool is illustrated and text gives brief description of features—Stanley Electric Tools, Div. The Stanley Works, Dept. PD, 195 Lake St., New Britain, Conn.

Flexible Air Duct

FLEXIBLE AIR DUCT for air conditioning, industrial ventilating and materials handling is described in Form No. 622. A selection guide explains where to use various types of duct, lists specifications, and describes typical applications. Sections on engineering features and installation are included—The Wire-mold Co., Hartford 10, Conn.

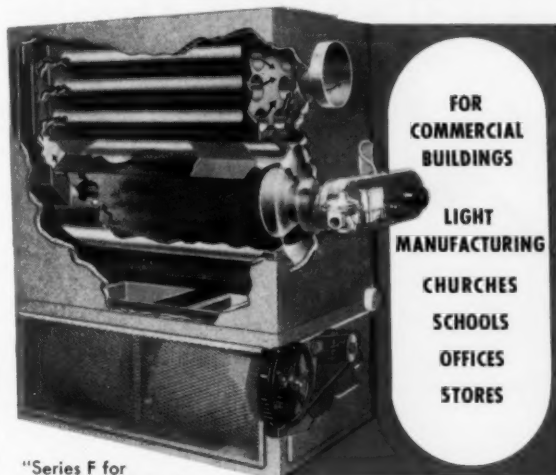
Seamless Terne Roofing

"SEAMLESS TERNE FOR ROOFING" gives detailed instructions for installing terne roofing, now available in 50 ft seamless rolls. According to the association, typical installed costs of roofs where the new rolled form is used range from 50 to 75 cents per sq ft. Illustrations show several buildings with various types of terne roofs—Lead Industries Association, 292 Madison Ave., New York 17.

Electrostatic Air Cleaner

FOLDER describes how "Statronic" electrostatic air cleaner operates by statically bombarding dirt and dust particles. Illustrations show how unit negatively ionizes the shattered particles. According to the company, the high negative ionization developed due to the static charge prevents any of the particles from adhering to ceiling, wall surfaces, fans, ducts, etc.—CRS Industries Inc., 1405 Locust St., Philadelphia 2.

MAMMOTH Compact-Aire HEATERS



FOR
COMMERCIAL
BUILDINGS

LIGHT
MANUFACTURING

CHURCHES

SCHOOLS

OFFICES

STORES

"Series F for
upright installation"

Oil or gas BTU output 185,000 to 500,000



Versatile—The Compact-Aire heater, either oil or gas fired, is the perfect answer to heating all types of small Commercial and Industrial buildings. This is a heater you can install with perfect confidence in any structure requiring a BTU output from 185,000 to 500,000. Finely engineered, Compact-Aire heaters have many optional features, allowing you to custom fit your particular job.

Adaptable—Because they are available in six different models with nine sizes in each model, Compact-Aire heaters are adaptable to even the most difficult heating problems; either as package units or with ducts. Their high efficiency and almost silent operation make their installation desirable where super-quiet operation is desirable.

Economical—Stainless steel cylindrical combustion chambers tailor oil or gas flame in any position. High efficiency, low R.P.M. blower with life-time bearings operates with vibrationless efficiency. Heat exchanger design extracts maximum heat for top fuel economy.

10 Year Warranty—The basic heating element in every Compact-Aire heater is unconditionally warranted as to materials and workmanship for ten years.

Please write for Bulletin CA-459.

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Wash, wring and replace in seconds.

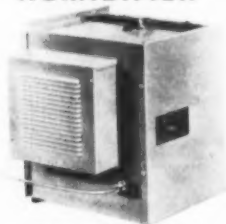
- 100% filtration area ... made of miracle POLYURETHANE
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- holds more dust, outperforms all other filtering materials ... and it's permanent too!

PROTECTS HEALTH
WITH BUILT IN
GERM KILLING
POWER!

COMPLETE RANGE
OF 12" AND 18"
SIZES FOR ALL
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CONDITIONERS

AUTO-FLO HUMIDIFIERS FILL EVERY NEED

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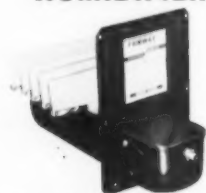
extra performance
for small or large homes

PORTABLE POWER HUMIDIFIER



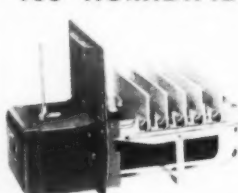
High capacity when and
where you need it

FAIRWAY HUMIDIFIER



Expertly engineered for
trouble-free performance

FAMOUS '150' HUMIDIFIER



World's fastest selling unit!

Autoflo
CORPORATION
Detroit 39, Michigan
IN CANADA: 1305 Windsor — Windsor, Ontario

new literature

(Continued)

Soldering and Brazing

CATALOG 12 includes information on "Standard 5" kit for brazing or soldering jobs. Kit includes soldering iron, four torch stems, torch handle, two tank unions, and 6 ft of 3/16 in. fitted hose—*Universal Cutting & Welding Equipment Mfg. Co. Inc.*, 2850 Ravenswood Rd., Ft. Lauderdale, Fla.

Air Conditioning Equipment

SPECIFICATION SHEETS cover air cooled packaged units with remote condensers (form LL-432) and air cooled split systems (form LL-433). Engineering specification sheets are also available for Model 1103-07 air cooled packaged unit (form ES-158) and for Model 1205-02 air cooled condensing unit (form ES-155)—*Airtemp Div., Chrysler Corp.*, 1600 Webster St., Dayton 1, O.

Heating Controls

CONDENSED CATALOG of heating controls lists several new products including "Click Dial" wall mounted electric heating thermostats, a low voltage heating thermostat, and an automatic changeover control for use with combination heating and cooling thermostats. Also new are single element Series 530 combination fan and limit controls. Request bulletin 1508-AG—*Penn Controls, Inc.*, Goshen, Ind.

Miniature Ventilators

ENVELOPE STUFFER includes photographs of five sizes of miniature aluminum ventilators designed to eliminate moisture condensation between walls. Ventilators are available in diameters of 1, 2, 2½, 3 and 4 inches. Ask for bulletin 229-L, revised—*Leigh Building Products Div., Air Control Products, Inc.*, Coopersville, Mich.

Vented Recessed Gas Heaters

LITERATURE illustrates "Desert Sun" vented recessed gas heaters designed for installation on either inside or outside walls. Specifications are given for models ranging in capacity from 25,000 to 50,000 Btu input. Also being offered is a circular covering "Safti-Vent" gas heaters—*H. C. Little Burner Co., Inc.*, Dubois and Woodland, San Rafael, Calif.

Propeller Fans

BULLETIN A-109E features a section on new low-speed, high volume fans available in sizes from 65 to 94 inches. According to the company, new fans in-

NOW IT'S **BURNHAM** FOR AIR CONDITIONING TOO!

Here's traditional
BURNHAM quality and
service in a complete
line of air conditioning
equipment...the right
unit for every installation.

- ★ "A"-TYPE EVAPORATORS
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- ★ EVAPORATOR-BLOWERS
- ★ UNIVERSAL BLOWERS

Here's Summer comfort that's truly carefree for both your customers and you! Just team one of these new Burnham evaporators with its proper condensing unit. You can count on Burnham's 87 years of quality to assure trouble-free performance. Both split system units and complete packaged units are available in 2, 3, 4 and 5 horsepower sizes. Cabinets have handsome two-tone Hammerloid finish. On your next cooling job . . . install Burnham for quality!



Write today for full information on the new Burnham line!

BURNHAM CORPORATION

Warm Air and Cooling Division, Belle Vernon, Pa.

**BURNHAM CORPORATION
BELLE VERNON, PA.**

AA-60

Please send me, without obligation, full information on
Burnham Winter and Summer Air Conditioners.

Name

Address

City State

new literature

(Continued)

crease efficiency and economy where large volumes of air must be moved because a single unit will do the work of several smaller fans. Other models described include ring and panel mounted fans in sizes from 12 to 60 in., a reversible fan, and pedestal and wheel mounted models for spot cooling applications—*Hartzell Propeller Fan Co., Div. Castle Hills Corp., 1025 Roosevelt Ave., Piqua, O.*

Flexible Ductwork

USES AND ADVANTAGES of flexible duct for air distribution are explained in catalog 40-49, "The Facts About Thermaflex." According to the company, use of the flexible ductwork provides savings in installation costs as well as improved air flow, also permits future changes in interior layout without expensive alterations. Duct is designed for both high

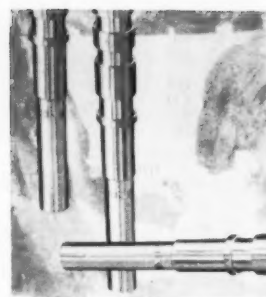
and low pressure air conditioning systems. Send requests on company letterhead—*Flexible Tubing Corp., Guilford 2, Conn.*

Dust Collectors

BULLETIN No. 1928 (six pages) discusses design and construction principles of Series 345 dust collectors. Included are two nomograms, one for collector selection, the other for efficiency determination. A sample problem is used to explain use of the nomograms—*American-Standard Industrial Div., Detroit 32.*

Bending Brake

"FORM-ALL" HAND OPERATED BENDING BRAKE designed to form shapes quickly and accurately with little or no tooling are described in bulletin 26-5. Photographs show how various bends are produced and diagrams illustrate operating principle. Specifications are included—*Lake Erie Machinery Corp., 600 Woodward Ave., Buffalo 17.*



HOOVER DAM

call **WESTERN UNION** operator 25

Your J&L stainless steel distributor can serve you better *because J&L serves him better*, backing him with the full facilities of J&L's Stainless and Strip Division.

Your J&L distributor can reduce your costs by providing a complete range of pre-production services, and doing it economically! He can save you the capital investment required to maintain long term inventories; he can help you eliminate the costs of overhead connected with stocking, accounting, and the inevitable losses incurred through waste and obsolescence due to specification changes.

Technical assistance in solving production problems is also available from your J&L distributor... when those problems are connected with an application using stainless steel, J&L's own staff of technical specialists will promptly answer your distributor's call for additional help.

Even when advanced research is required you can call on your J&L distributor in confidence. He will be happy to discuss your problem because he knows he is backed by one of the world's most respected teams of metallurgists—J&L's own staff in laboratories at Detroit and the famous Graham Research Laboratories at Pittsburgh.

Your J&L distributor is as near as your telephone. Call Western Union Operator 25 for the name of your J&L distributor of Consistent Quality stainless steel.

J&L — a leading producer of stainless steel and precision cold rolled strip steels

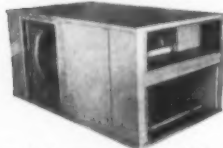


STAINLESS
SHEET • STRIP • BAR • WIRE

Comfort-Aire AIR CONDITIONING



Self Contained Air Conditioners



Four full capacity models of 2, 3, 4 and 5 h.p. for residential and commercial applications. Smart in appearance and design proven, they allow complete flexibility of installation. Large coil surfaces, bonderized cabinets, Tecumseh compressor, capillary system and other quality features provide a Comfort-Aire owner many years of quiet, dependable operation.

Remote Air Conditioners



Available in the same size range as self-contained models, the split systems offer a large choice of evaporator-blower units and coil sections. The compact, efficient matched compressor units feature oversized condensers, low velocity horizontal air flow and Tecumseh compressors. Comfort-Aire matched systems are easy to install, quiet in operation and weather proofed to provide years of trouble free performance.



Also Available in Heat Pump Models

Dehumidifiers - Portable Room Air Conditioners - Through-the-Wall Air Conditioners - Furnaces - Air Cooled Remote and Self Contained Air Conditioners - Air Cooled Remote and Self Contained Heat Pumps

HEAT CONTROLLER, INC.

1900 Wellworth Ave.

Jackson, Mich.



consistent quality
production
depends on
consistent quality
stainless
steel



Shafts of all types move from source
to point of use via J&L Consistent
Quality stainless steel pump shafts
and impellers.

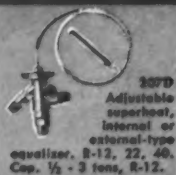
★ **Call Western Union by number—ask for Operator 25**
for the nearest source of Consistent Quality J&L Stainless Steel

Jones & Laughlin Steel Corporation • STAINLESS and STRIP DIVISION • DETROIT 34

THERMOSTATIC EXPANSION VALVES



307C
Adjustable
superheat,
internally
equalized, R-12, 22, 40.
Cap. 1/2 - 1 1/2 tons, R-12.



307D
Adjustable
superheat,
internal or
external-type
equalizer, R-12, 22, 40.
Cap. 1/2 - 3 tons, R-12.



314
Adjustable
superheat,
external-type
equalizer.
Solder connec-
tions, R-12, 22.
Cap. 1 - 3 tons, R-12.



309
Adjustable
superheat and
pressure limit,
internal
or external-type equalizer,
R-12, 22, 40. Cap.
1/2 - 1 1/2 tons, R-12.



217
Adjustable
superheat,
external-
type equalizer.
Solder
connections,
R-12, 22. Cap.
5 - 12 1/2 tons, R-12.



318
Two-flt
construction. Ad-
justable
superheat.
External-
type equalizer,
R-12, 22. Cap. 16-25
tons, R-12.

AUTO. EXPANSION VALVES



304C
Self-adjusting (no
gauge needed),
R-12, 22, 40.
Cap. 1/2 ton, R-12.



304C
Adjustable 10"
to 75 psig,
R-12, 22, 40.
Cap. 1 ton, R-12.

WATER REG. VALVES



68A
Near self-
cleaning,
chatterproof,
sliding action,
60-300 psig,
1/2", 3/4", 1" NPT.



65, 65H
Large capacity - up to
60 gpm at
50 psig,
water pressure,
70-170
psig, R-12.
1", 1 1/4" NPT.

FILTERS AND DRIERS



410
New Trap-Dri. Re-
moves acid, water,
dirt. 1-7 1/2 tons, R-12.



408
Trap-Dri filter.
Removes dirt.
1/4" to 1/2" flare
connections.



414
Jet-Dri. Removes
water, acid,
1/4" flare connections.



237
Opens on outlet
pressure decrease.
Cap. 1 1/2 - 3
tons, R-12.



2355
Opens on inlet
pressure
increase.
Adjustable
0-40 psig,
20-70 psig.



235
Opens on inlet
pressure increase.
Cap. 5-14
tons, liquid
R-12.
Adjustable
40-140 psig,
60-210 psig.

PRESSURE REGULATING VALVES

SOLENOID VALVES FOR NONCORROSIVE REFRIGERANTS OR WATER



47M, 47S
Metal-to-metal or soft
resilient seat. 3/32"
orifice. 1/4" NPT or
OD solder.



73
Quiet, floating plunger.
5/32", 3/16" or 7/32"
orifice. 1/4" NPT, flare,
or 1/4" ODF.



271
13/32" orifice.
1/4" or 1/2" NPT,
1/4" ODF or
1/4" ODM.



272
17/32" orifice.
1/4" NPT,
1/4" ODF or
1/4" ODM.



273
1/2" orifice.
1" NPT,
1 1/4" ODF or
1 1/4" ODM.



274
1" orifice.
1 1/2" NPT,
1 1/4" ODF or
1 1/4" ODM.

AUTOMOTIVE AIR CONDITIONING



For most
cars. 3/8"
inlet, 1/4" or
1/2" outlet. Internal or
external-type equalizer.
Pressure limiting 1 1/2
ton, R-12. Factory-set
superheat.

DISTRIBUTORS



320
Cap. 1/2-20 tons, R-12.
1/4" to 1 1/4" ODF inlet.
Removable 3/8" orifice.

619 DEVICES

for refrigeration and air conditioning control and their full specifications are organized for quick reference in the newest CC catalog. Only the basic models are illustrated on this page. *You should have the whole catalog.* Write for CC Catalog W-5-S today to the address below.



Creative Controls for industry

CONTROLS COMPANY OF AMERICA

HEATING AND AIR CONDITIONING DIVISION

2452 N. 32nd Street, Milwaukee 10, Wisconsin • Cooksville, Ontario • Zug, Switzerland

HAC-36-60

Residential Air Conditioning

CONSUMER BROCHURE, "Complete Home Air Conditioning, a Wise Investment," explains that in purchasing an air conditioning system, a homeowner is making an investment in permanent comfort as well as adding to the value of his home and property. Types of systems available are described and drawings show how they are used in typical installations. One section gives practical tips on cutting down operating costs. A keyed drawing shows location of condensing unit, cooling coil, refrigerant tubing and controls—*Rheem Mfg. Co., 7600 S. Kedzie Ave., Chicago 52.*

Metal Joining and Cutting Processes

WELDING HANDBOOK, Section III, "Miscellaneous Metal Joining & Cutting Processes," covers special welding and metal joining processes, as well as arc and oxygen cutting processes.

Scope of the handbook has been widened to include the welding of plastics and adhesive bonding of metals. The chapter on welding of plastics covers identification of thermoplastic materials, definitions, friction welding, hot gas welding, equipment, design, materials, testing and common applications. The chapter on adhesive bonding includes information on materials and applications, fabrication procedures, inspection of prepared surfaces, and adhesive application.

Other sections cover forge, thermit and induction welding; surfacing; metallizing; brazing; soldering; oxygen cutting; arc cutting; ultrasonic welding; welding by cold working; and stud welding.

The book is cloth bound, contains 512 pages. Copies are priced at \$9—*American Welding Society, 33 W. 39th St., New York 18.*

Oil Burner Nozzle Selection

POCKET SIZE "NOZZLE GUIDE" (third edition) is designed to help servicemen select proper nozzles for maximum efficiency and economy on new and existing installations. A compilation of data furnished by manufacturers of oil burners and furnaces, the guide includes manufacturers' recommendations for nozzle size, angle of spray and pattern type for approximately 3000 models. Booklet contains 102 pages, is priced at \$1.50 per copy—*Heating Products Div., Wm. Steinen Mfg. Co., 43 Bruen St., Newark.*

Vibration Isolators, Machinery Mounts

BULLETIN 59-04.5 EXPLAINS HOW combination shock and vibration isolators lengthen equipment life, reduce noise, cut maintenance costs and improve prod-

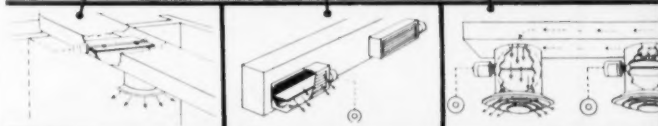
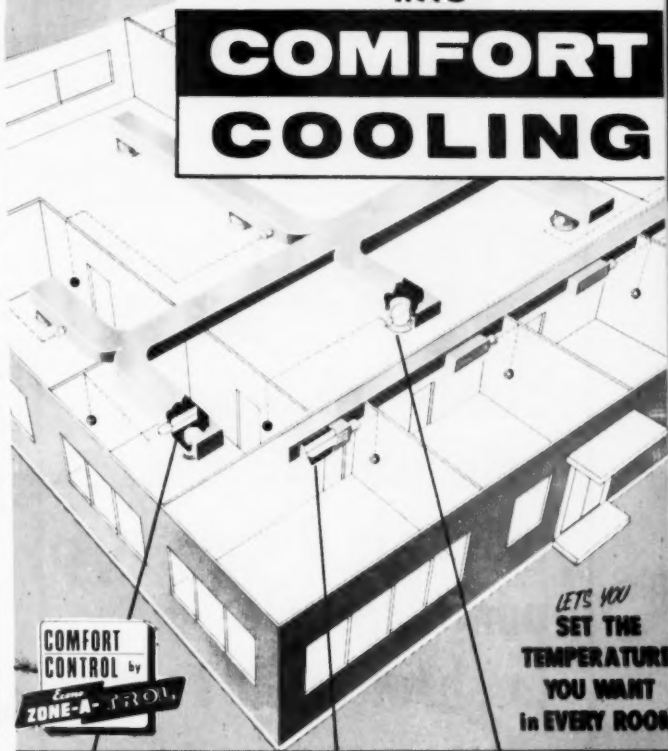
ZONE-A-TROL

PUTS THE

COMFORT

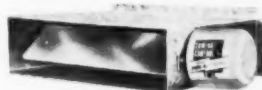
INTO

COMFORT COOLING



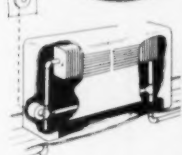
ZONE-A-TROL DAMPER ACTUATORS

Automatically Control The Flow Of Air to Each Room



Now Zone-A-Trol lets you install cooling and heating systems that, . . . **GUARANTEE COMPLETE COMFORT IN EVERY ROOM at EVERY HOUR of the DAY or NIGHT.**

Providing the easy, inexpensive answer to installing Individual Room Temperature Control on any new or existing residential or commercial heating or cooling system; . . . Low Voltage . . . Thermostat Operated . . . Zone-A-Trol Damper Actuators . . . automatically control the flow of air to each room or zone, . . . thereby making it possible to shift the full cooling load from one room or zone to another to compensate for such factors as the afternoon sun, shifting crowds of people, etc.



On Balanced Pressure Hydronic Heating - Cooling Systems Zone-A-Trol By Pass Valves control the flow of water to each fan coil unit.

SEND TODAY FOR COMPLETE INFORMATION

ECONO PRODUCTS COMPANY, INC.

Division of Viking Instruments, Inc. East Haddam, Connecticut



A Complete Line of Zone Controls



For Every Heating and Cooling System



DURO-DYNE DRILL SCREWS

Win Acclaim of Sheet Metal Men From Coast-to-Coast!

official estimates of State-by-State population in 1959, made recently by the U.S. Census Bureau, and...

If You haven't started
using **DRILL SCREWS**
You're still wasting
valuable time and
money in drilling or
punching holes
in sheet metal!
DRILL SCREWS^{T.M.}
drill their own holes!

Write now for details
and **FREE SAMPLES**



The Greatest Name in Sheet Metal Specialties
DURO-DYNE CORPORATION
Farmingdale, New York

new literature

(Continued)

uct performance. Also available are bulletin 60-04 which explains how machinery mounts provide cost reduction when used under metal forming and cutting machines such as punch presses, grinders, etc.; and bulletin 60-05 which tells "How to Maintain Absolute Level for Precision Applications"—Barry Controls Inc., 700 Pleasant St., Watertown 72, Mass.

Horizontal Furnaces

GAS-FIRED HORIZONTAL forced warm air furnaces for installation in attic, crawl space, utility room, basement or garage are described in form No. JS 239 P. To assist dealer-contractors in consumer calls, brochure includes a cutaway photograph showing design features and diagrams illustrating typical installations. Also described are matching add-on cooling units—Janitrol Heating and Air Conditioning Div. of Midland-Ross Corp., Columbus 16, Ohio.

Arc Welders

CATALOG WL-4-60 (12 pages) illustrates and describes ac, dc and ac/dc welders. Also illustrated are gasoline and diesel engine driven welders and welder/power plants. Accessories and controls described include carbon arc torch kit; momentary contact; remote hand, foot and motor-operated controls; high frequency units; and electrode holders—Miller Electric Mfg. Co., Inc., 718 S. Bounds St., Appleton, Wis.

Chromium-Nickel Stainless Steels

BOOKLET PRESENTS CHEMICAL ANALYSES, mechanical properties, application data and other information on chromium-nickel types of stainless steel. One section covers corrosion resistance, another fabricating and joining, and another the care of stainless steels in fabricating and finishing. Ask for Adv. 1124—Republic Steel Corp., 1441 Republic Bldg., Cleveland.

**Warm air contractor
gets cooling job in
wet heat building...**

AND SAVES 20%!

SEE PAGE 81

DIECKMANN ONE PIECE CONDUCTOR ELBOWS AND SHOES

SQUARE CORRUGATED ELBOWS AND SHOES, STYLE "A" (ORDINARY CURVE)
No. 000 - 10° No. 00 - 20° No. 0 - 30° No. 1 - 45° No. 2 - 60° No. 3 - 75° No. 4 - 90° No. 3 - 75° SHOE



SQUARE CORRUGATED ELBOWS AND SHOES, STYLE "B" (SIDE CURVE)
No. 000 - 10° No. 00 - 20° No. 0 - 30° No. 1 - 45° No. 2 - 60° No. 3 - 75° No. 4 - 90° No. 3 - 75° SHOE



ROUND CORRUGATED ELBOWS AND SHOES
No. 000 - 10° No. 00 - 20° No. 0 - 30° No. 1 - 45° No. 2 - 60° No. 3 - 75° No. 4 - 90° No. 3 - 75° SHOE



PLAIN ROUND ELBOWS AND SHOES
No. 000 - 10° No. 00 - 20° No. 0 - 30° No. 1 - 45° No. 2 - 60° No. 3 - 75° No. 4 - 90° No. 3 - 75° SHOE



This Emblem of Quality and Gauge of Material is Stamped in each Elbow and Shoe.

TRADE *F. Dieckmann* MARK

Our complete line is available in 28, 26, 24 Gauge Galvanized Steel, Copper Bearing Steel, Armco Ingot Iron, all Hot-Dipped—Galvanized after formation. Stainless Steel, 1X 40# Terne, Copper, Lead Coated Copper, Zinc, Aluminum, Mill or Embossed Finish. Bonderized-Galvanized Elbows and Shoes, ready for painting. ORDER ANGLE BY NUMBER OR DEGREE.

FREE Wall Chart—Illustrated 21" x 27" describes complete line . . . write for Your Copy.

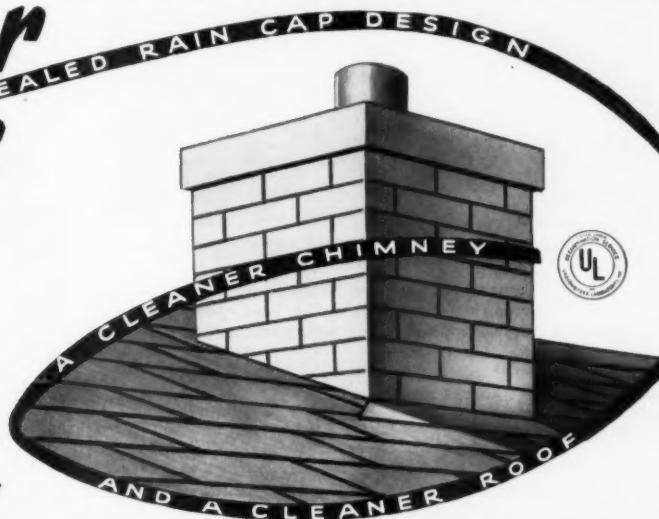
THE FERDINAND DIECKMANN CO.

1300 HARRISON AVENUE

CINCINNATI 22, OHIO

Vitroliner Chimneys

*Freedom from
Streaking*



Vitroliner Chimneys with their concealed rain cap design, eliminate streaking on the housing and roof, by providing for the free flow of combustion gases from the chimney.

These Underwriters' Listed packaged chimneys are distributed and warehoused all over the United States and Canada. They are available in 6", 7", 8", 10" and 12" diameters with red, buff or white brick designed housings, as well as neutral gray.

CONDENSATION ENGINEERING CORPORATION

3511 W. Potomac Ave., Chicago 51, Ill.

Send us information on Vitroliner Chimneys.

Name

Company

Address

City Zone State

VITROLINER. THE PIONEER CHIMNEY. LEADS IN QUALITY AND ENGINEERING FEATURES.

LARGE OR SMALL **LO-BLAST** POWER GAS BURNERS COST LESS TO OPERATE



Low cost installation and operation dictated Lo-BLAST selection in this modern school.



Sixteen Lo-BLAST Burners at this army camp burn 30,000 cu. ft./hr. of gas when all are operating.

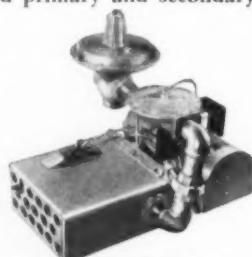


In this development of 472 small homes, Lo-BLAST Economite Burners replaced oil burners originally installed.

Lo-BLAST Burners cost on an average of 10% less to operate. They use an extremely quiet, low speed blower to provide perfectly controlled primary and secondary air from start to finish of each run. Operation is always independent of natural draft conditions—ideal for down draft boilers.

Cost less to install

Lo-BLAST Burners eliminate the need for high chimneys—inshot design and complete factory assembly reduce maintenance and installation costs. Each unit is factory tested on gas before shipment.



Capacities: 70,000 to
20,000,000 BTU/hr. input.
Write for literature

**MID-CONTINENT
METAL PRODUCTS CO.**
1960 N. Clybourn Ave., Chicago 14, Ill.

we hear that...



ORIGINAL ESTABLISHMENT of L. J. Mueller Furnace Co. was a combination hardware store and tin shop. Today, the Milwaukee operation alone uses over 20 acres of plant space. Mueller also operates a plant in Alhambra, Calif.

► HAROLD P. MUELLER SR. has retired as president and general manager of the Mueller Climatrol division of Worthington Corp. He will continue service with Worthington Corp. as a director. Succeeding him as president and general manager of the Mueller division is his son, Harold P. Mueller Jr., great grandson of the L. J. Mueller Furnace Co.'s founder.

Mr. Mueller Sr. joined the company in 1919, became sales manager in 1924, vice president and general sales manager in 1929, and president and treasurer in 1931. Upon acquisition of Mueller Climatrol by Worthington in 1954, he became president and general manager of the Mueller Climatrol division and was also named a director of Worthington.

► WATERLOO REGISTER CO., INC., has been awarded a "Certificate of Merit" by the Producers' Council, Inc., Washington, D.C. The award, presented at the American Institute of Architects' convention in San Francisco, was made for "an outstanding effort in the production of informative, high quality product literature." The 58-page catalog which won the award contains complete application and specification data on the company's return and supply registers, grilles, volume control dampers and door ventilators.

► ELECTRIC UTILITIES throughout the country recently received promotional material from American-Standard Air Conditioning Div. describing the division's new electric warm air furnaces, packaged heat pumps and split system heat pumps for residential and light commercial applications.

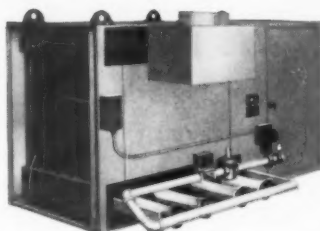
According to R. J. Berkshire, general marketing manager, "The electric heating business is expanding rapidly. It is essential that the warm air heating and air-conditioning dealer-contractor be provided with the necessary equipment to meet the challenge of other types of electric heating equipment. Every effort should also be made to promote forced warm air electric heating and air conditioning to the utilities so that they may appreciate more fully the advan-

J-C SUSPENDED FURNACES

are engineered for
EXTRA POWER



Oil-Fired Suspended
Model No. OL-350-S22,
224,000 Btuh output.



Gas-Fired Suspended
Model No. GS-24,
192,000 Btuh output.

New and practically unlimited zone-heating possibilities, plus a saving of valuable floor space and easy installation are yours with the great 23-model line of Jackson & Church Gas and Oil-Fired Suspended Heaters . . . all the way from 123,000 to 1,000,000 Btuh output. Find out about J-C's extra fuel economy and extra power to deliver an extra volume of air against abnormal static pressure. Update your files with current specs. Write today.

J-C AMERICA'S
LARGEST
AND MOST COMPLETE
WARM AIR FURNACE LINE.

Direct-Fired Unit Heater, 400,000 to 2,000,000 Btuh output. Floor-mounted, suspended, inverted models. Oil, gas or dual fuel.

12 Powered Tubular Enclosed Cabiner Models . . . 208,000 to 320,000 Btuh output. Oil, gas or dual fuel.

37 Powered Tubular Models with separate blower cabinets . . . 400,000 to 3,800,000 Btuh output. Oil, gas, dual fuel, or stoker firing.

J-C
DIVISION OF
JACKSON & CHURCH
YORK-SHIPLEY, INC.
YORK, PENNSYLVANIA
Pioneers and Specialists in Automatic Heat Boilers to 600 hp. Furnaces to 4,750,000 Btuh

America's Best Buy in a POWER HACKSAW



1st
• on the market
• in performance
• with professional
workmen
everywhere



SAWZALL

There's only one Sawzall! Thousands of workmen have proved it! By their preference, they have made Sawzall America's No. 1 power hacksaw. It's your best buy when you want:

- the utmost in heavy-duty cutting power
- professional fine-tool quality
- all-day handling ease, comfort, and safety
- freedom from costly maintenance
- dependable service, superior workmanship, and lasting satisfaction

Visit our Booth 584—National PHC Exposition—Cleveland Public Auditorium—June 19-22

... be sure to ask about **MILWAUKEE'S NEW SPRING BACK BLADES**



Made of best-quality flexible steel, specially hardened, highly resistant to bend or twist.

See your MILWAUKEE Distributor for a demonstration or write:

Milwaukee Electric Tool Corporation
5352 W. STATE ST., MILWAUKEE 8, WISCONSIN



Look under
"TOOLS-Electric"

AO-121

tages that such air distribution systems have to offer.

"As a part of this promotion to electric utilities, we are offering our distributors a special 'utility showroom display' which features the five major advantages of electric year 'round air conditioning — air filtering, air circulation, air heating, air cooling, and year 'round humidity control. This display measures 6 X 6 ft and is available for use by any utility."



BEGINNERS as well as experienced installers learned about applications of Armstrong air conditioning equipment at recent factory school

► **DEALER-CONTRACTORS** FROM 10 STATES attended the first of two factory air conditioning schools recently held by the Armstrong Furnace Co. Carl Bryson, air conditioning service engineer, conducted the four-day school with the assistance of Don Pabst. Subjects covered included the refrigeration cycle, wiring, trouble-shooting, and installation.

► **HEIL-QUAKER CORP.** recently conducted a series of air conditioning training schools at its Nashville headquarters. At the schools, distributor and dealer-contractor sales and servicemen are trained in figuring, sizing, servicing, wiring and various other phases of air conditioning application. The school is not a lecture course, the company says, but requires actual participation of those attending in handling and using air conditioning tools and equipment. Dick Herbert is supervising the course and is assisted by Fred Zwanzig, air conditioning sales manager, and Wally Ollenburger, service manager.

► A **NEWSPAPER** designed for architects, contractors, consulting engineers, building owners, etc., is now being published by American Air Filter Co., Inc. Purpose of the new publication is to provide product information and technical articles to persons interested in air filtration, dust control, heating, ventilating and air conditioning.

► **THE BOSTON DISTRICT OFFICE** of Janitrol Heating & Air Conditioning, Div. of Midland-Ross Corp., has been named winner of the division's 1959 sales manager's trophy for best performance against quota. Max Tappero is manager of the district. Runnerup district was Buffalo, and Denver was third.

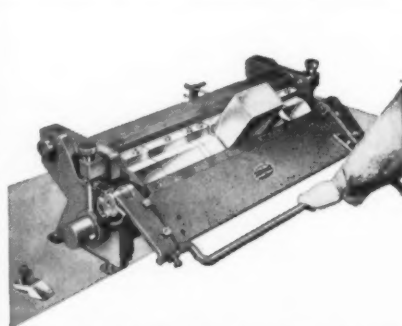
The division's "Select" dealers met recently for the annual "Goodwill Get-Together" at the Deauville Ho-

Hand Operated **BOX AND PAN BRAKES**

One Man Operation - Quick Adjustments - Rugged Construction



UNIVERSAL BOX AND PAN BRAKES
Capacities up to 12-gauge sheet metal
and bending lengths up to 10 feet.



BENCH MODEL BOX AND PAN BRAKES
Made in three sizes with bending lengths
of 24, 30, and 36 inches up to 16-gauge
sheet metal. Stand is available as extra.

Descriptive Literature on Request.

DREIS & KRUMP
MANUFACTURING COMPANY
7404 S. Loomis Boulevard, Chicago 36, Illinois

NATIONAL



Angle Rings
give you
the big

on cost

No thoughtful sheet metal contractor can "pass by" the discounts that apply to National angle rings.

The Labor Discount

Because these rings are *rolled accurately*, by expert metal craftsmen, they are round, uniform in curvature. This means that there is no lost motion, no costly fitting time required — in your shop or on the job site.

The Time Discount

Because National leg out rings are available in stock for immediate shipment, you gain days, even weeks of time by using this on-the-floor warehouse service.

The Price Discount

Because production runs in all sizes cut costs, National can quote you on stock prices, not custom work. It will pay you, as it has so many others, to investigate National today.

Write for a stock list bulletin and price list.

Rings Rolled To Order

National rolls accurate rings to nearly any size, in all ductile metals. Phone, wire or write for a quotation on your requirements.



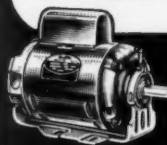
NATIONAL

METAL FABRICATORS

2138 South Sawyer Ave., Chicago 23, Illinois • Blshop 7-4255

W.W. GRAINGER, INC.

Specialists in
ELECTRIC MOTORS



4000 Items in Stock

ELECTRIC MOTORS
(1/250 to 60 HP)
GENERATORS
BLOWERS
EXHAUST FANS
AIR CIRCULATORS
HEATING EQUIPT.
AIR COMPRESSORS
POWER TOOLS
PUMPS

PROMPT DELIVERY. Warehouses and sales offices coast-to-coast (see list below.) All fully stocked for pick-ups or 24-hour shipping service.

SALESMEN at each office available for help and guidance.

WHOLESALE ONLY. Free net price catalog sent only when requested on letterhead. No consumer requests honored. O.E.M. prices available for quantity buyers.

188 PAGE CATALOG and buying guide. Includes detailed descriptions on over 4000 items. Lots of technical and application data. Request your free copy.



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NEAREST YOU**

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ARKANSAS LITTLE ROCK • 1805 Scott St.	NEW YORK ALBANY 6 • 20 Colvin Ave.
CALIFORNIA LOS ANGELES 33 • 1401 E. 3rd St.	BUFFALO 4 • 105 Ash St.
OAKLAND 7 • 2000 Adeline St.	NEW YORK 13 • 533 Canal St.
SAN DIEGO 1 • 144 W. Market St.	SYRACUSE 6 • Tarbell Rd.
SAN FRANCISCO 10 • 519 Potrero Ave.	NORTH CAROLINA CHARLOTTE 3 • 1216 S. Mint St.
COLORADO DENVER 4 • 695 Bryant St.	OHIO CINCINNATI 6 • 2400 May St.
CONNECTICUT WEST HARTFORD • 201 Dexter Ave.	CLEVELAND 14 • 2150 Hamilton Ave.
DISTRICT OF COL. WASHINGTON 18 • 1860 Adams, N.E.	COLUMBUS 15 • 400 E. Livingston Ave.
FLORIDA JACKSONVILLE 6 • 35 W. 12th St.	DAYTON 2 • 222 Washington St.
MIAMI 37 • 2727 N.W. 2nd Ave.	TOLEDO 2 • 520 Southard St.
TAMPA 4 • 1808 Cypress St.	YOUNGSTOWN 2 • 16 Pyatt St.
GEORGIA ATLANTA 16 • 1046 Memorial Dr., S.E.	OKLAHOMA OKLAHOMA CITY 2 • 316 E. Grand Ave.
ILLINOIS CHICAGO 12 • 2330 W. Adams St.	OREGON PORTLAND 17 • 2410 N. Mississippi
MELROSE PK. • 1660 N. Mannheim Rd.	PENNSYLVANIA ALLENTOWN • 723 E. Green St.
INDIANA INDIANAPOLIS 2 • 1714 E. Riverside	PHILADELPHIA 4 • 3215 Spring Garden
SOUTH BEND 18 • 1133 So. Main St.	PITTSBURGH 1 • 3812 Penn. Ave.
IOWA DAVENPORT • 1215 E. River St.	RHODE ISLAND PROVIDENCE 5 • 236 George Ave.
DES MOINES 14 • 66 Washington Ave.	TENNESSEE KNOXVILLE 17 • 3628 Broadway N.E.
KANSAS WICHITA 5 • 1201 N. Mosley St.	MEMPHIS 3 • 339 So. Front St.
KENTUCKY LOUISVILLE 3 • 120 S. 12th St.	NASHVILLE 4 • 210-17th Ave. N.
LOUISIANA NEW ORLEANS 25 • 4813 Eve St.	TEXAS DALLAS 10 • 2425 Farris St.
SHREVEPORT • 2031 Texas Ave.	EL PASO • 1100 E. Missouri St.
MARYLAND BALTIMORE 30 • 800 S. Hanover St.	FT. WORTH 3 • 1119 W. 5th St.
MASSACHUSETTS BOSTON 35 • 84 Lincoln St.	HOUSTON 14 • 1409 St. Emanuel St.
MICHIGAN DETROIT 3 • 1701 E. Mc Nichols Rd.	SAN ANTONIO 2 • 606 E. Crockett St.
GRAND RAPIDS 3 • 545 Grandville S.W.	UTAH SALT LAKE CITY 16 • 527 No. 3rd W.
MINNESOTA MINNEAPOLIS 4 • 1818-4th St. S.	VIRGINIA NORFOLK 8 • 836 W. 44th St.
MISSOURI KANSAS CITY 8 • 1629 Broadway	RICHMOND 20 • 1427 W. Cary St.
ST. LOUIS 3 • 2110 Pine St.	WASHINGTON SEATTLE 4 • 1001-9th Ave. S.
	SPOKANE 1 • W. 22 Main Ave.
	WEST VIRGINIA CHARLESTON • 1037 Central Ave.
	WISCONSIN MILWAUKEE 4 • 136 E. Walker St.

W.W. GRAINGER, INC.

Dept. 102-B, GENERAL OFFICES, CHICAGO 12

Add a "HANDYMAN"
to your furnace
cleaning crew for
bigger profits!



Check all these
"HANDYMAN"
exclusive features:

- SPACE-SAVING MODERN DESIGN
- ONE MAN OPERATION
- SELF CLEANING FILTER BAGS
- FAST ALL WEATHER OPERATION
- LOW MAINTENANCE
- 75 Cu. Ft. SOOT HOPPER
- CONVENIENT HOSE STORAGE
- 2 EASY-TO-REACH TOOL BOXES

Get your share of the profitable furnace cleaning business with a minimum investment that insures big returns. The General "HANDYMAN" Furnace Cleaner is built with more power (up to 40 H.P.) and greater capacity than any other cleaner available today. Now... All residential, commercial, institutional and industrial heating system cleaning jobs can be done with ease at a maximum profit.

Investigate all the features and advantages of the General "HANDYMAN" Powervac Furnace Cleaner before you buy furnace cleaning equipment for your shop. Send for our *Profit Portfolio* with complete information and prices on the "HANDYMAN" and other General Furnace Cleaners. Do it now... and start profits rolling your way from more cleaning jobs, more repair jobs and more replacement part sales for a profitable 1959.

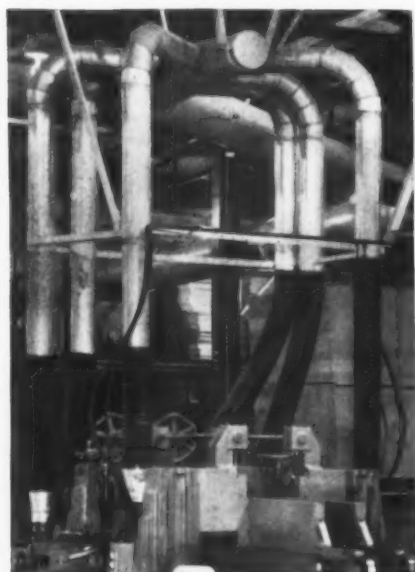
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Write Today
Independence 3-5127



Wm. W. Meyer & Sons

8259 Elmwood Ave., Skokie, Illinois

YOU SAVE MORE WITH FLEXAUST® HOSE



Thousands of successful installations prove that use of Flexaust hose and Portovent retractable duct with metal duct systems lower installation costs — but there are other important advantages

Exceptional abrasion resistance
Corrosion resistance
Noise absorption
Durability under heavy flexing
Provision for expansion and contraction
Easy relocation of hoods and machines

Made of high quality neoprene coated fabrics 1½ to 36" i.d.

Write today for full details
Distributors in all principal cities

THE FLEXAUST CO.

DEPT. AA 100 PARK AVE.
NEW YORK 17, N. Y.

Compact!
Unit Heater or Central System



**Norman®
Southerner®**
HORIZONTAL GAS FURNACES



- Saves floor space... can be located high out of the way.
- Saves installation time and costs... can be installed as a duct system.
- Versatile... outstanding performance when used as unit heater in commercial installations where extra velocity and quietness are required.
- A.G.A. approved for use as either central heating system or as a blower-type unit heater with any type of gas. Also approved for attic installations.

**Norman®
PRODUCTS
COMPANY**

1164 Chesapeake Ave.
Columbus 12, Ohio

we hear that

(Continued)

tel in Miami Beach. According to Harry C. Gurney, general sales manager, the annual two-day event was extended to three days as part of a new format that features morning business meetings, with afternoons free for informal discussions or recreation. "Select" dealers attain their positions by maintaining high technical and merchandising standards and the fulfillment of franchise agreements.

► **CHARLES J. HAINES**, president of Chemetron Corp. for 23 years, has been elected to the newly created post of chairman and chief executive officer. James W. Dunham, vice president and chairman of the finance committee, was elected president. He will continue to serve as finance chairman.

► **TWO EMPLOYEES** who began as office boys for Thatcher Furnace Co. recently were honored for completing a total of 90 years of continuous service. William R. J. White, who joined the Newark plant in 1910, and Daniel J. Buckley, who joined the New York office in 1920, each received a purse from president Carl Sahler. Mr. White is presently on assignment in the company's engineering department. Mr. Buckley is now Long Island district manager.

► **J. F. RAY**, vice president of General Controls Co., has been elected second vice president of the Gas Appliance Manufacturers Association. Mr. Ray has been active in gas industry activities for many years, has served on various GAMA committees in the past.

► **CONSTRUCTION HAS STARTED** on an approximate 50,000 sq ft addition to the heating and air conditioning plant of Lennox Industries Inc. The project includes three new buildings as well as extensive remodeling of existing buildings.

PATENTED **NORMAN** SEALED COMBUSTION



Radial-Flo application in Cadillac Super Market, Oxford, Michigan
Constructed and Operated by H. D. Grove

Norman Three-Sixty®

Gas-Fired **UNIT HEATERS**

answers more jobs better

Operating completely independent of room air, Norman Three-Sixty Unit Heaters can be installed in many applications where other unit heaters may fail.

They are especially suitable for super markets, bakeries, restaurants, meat shops, candy stores and other locations where combustion products entering the room threaten contamination.

Norman Three-Sixty Unit Heaters are particularly adaptable to drug stores, variety stores, dry cleaners or wherever exhaust fans create a negative pressure that may cause pilot outage.

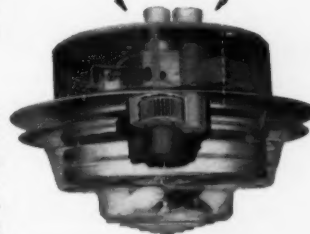
Two Types, Two Sizes

Radial-Flo units gently distribute a complete circle of warm air downward and outward. Down-Blow units provide direct, spot heating from high ceilings—excellent for blanketing vestibules, lobbies and doorways of garages, repair shops, warehouses and other entries exposed frequently to the outside weather.

Both Radial-Flo and Down-Blow models available in 85,000 or 115,000 BTU/hr. inputs.

100% Outside
Air For
Combustion

Combustion
Products
Are Forced
Outside.
Never Enter
Room



**WRITE US TODAY
FOR COMPLETE INFORMATION**



NORMAN PRODUCTS CO.

1164 Chesapeake Ave., Columbus 12, Ohio

We want to learn more about Norman Three-Sixty Unit Heaters.

NAME _____
COMPANY NAME _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

**"We need more
good men... to
keep pace with
our steady growth
in the field of
warm air heating"**

**DEALERS
DISTRIBUTORS
needed for**

KALAMAZOO
**WARM AIR
CONDITIONERS**



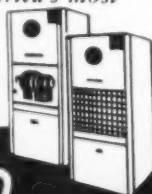
C. C. Whitcomb, President
Kalamazoo Furnace & Appliance
Mfg. Co.

Precision built warm air heating equipment, backed by fast, efficient service! That has been our story for over 50 years... and one reason for Kalamazoo's continued success in the field. The other reason is the loyalty of the fine men who represent us, year after year. These well-established distributors and dealers know the many advantages of handling the Kalamazoo line. A few choice, protected territories are still available. If you're interested in getting in on the profit end of this solid, fast-moving organization, why not write for details? You'll be mighty glad you did!



Featuring the famous patented
OCTAGON RADIATOR
*... the heart of America's most
efficient furnace*

**41 Models of gas, oil and
coal-fired units available.**



KALAMAZOO
Furnace and Appliance Mfg. Co.
615 2nd Avenue, Kalamazoo, Michigan

we hear that

(Continued)



NEW AIRCRAFT FLEET enables Pangborn Corp. to fly home office sales personnel, engineers and replacement parts to a customer's plant within hours after counsel or service is requested

► A FLEET OF THREE business aircraft was recently acquired by Pangborn Corp. The company will use the planes primarily to provide more rapid and convenient customer service.

► ONE OF THE COUNTRY'S FIRST custom-designed "Total Electric Gold Medallion Homes" has been completed in Jackson, Miss. The home is one of sixteen such specially designed homes commissioned by Westinghouse Electric Corp. to illustrate "a growing trend toward electrically heated homes." The Jackson home has a controlled environment on a year 'round basis through the use of a Westinghouse heat pump.

► HENRY K. STRAW has been elected vice president in charge of sales of Roberts-Gordon Appliance Corp. Mr. Straw joined the company in January 1959 as general sales manager.

► PARKER-KALON Div. of General American Transportation Corp. recently received an award of merit from the Folding Paper Box Association of America. In presenting the award, the association cited Parker-Kalon's "Grand-Pak" tapping screw carton as being "an outstanding example of progressive packaging."

► NEW REFRIGERANT CONTAINERS, representing some two years of research and more than a million dollars worth of new investment are now being used by the "Freon" Products Div., E. I. du Pont de Nemours & Co. Containers are offered in two sizes, loaded with 25 or 50 lb net of "Freon-12" or "Freon-22" refrigerant. According to Joseph C. Hoopes, manager of field distribution for the division, smaller size, lighter weight, and a carrying handle built into a valve protection collar "all provide ease of handling that makes a 50 lb size practical for the first time." Stacking is made possible through the valve protection collar and stacking ring.

► LENNOX INDUSTRIES INC. is conducting a series of engineer meetings in midwest cities. The meetings are designed for heating engineers, plant engineers, plant managers and others. Cities where meetings

we hear that

(Continued)

are being held include Denver, Kansas City, Wichita, Milwaukee, Des Moines, Minneapolis, Fargo, Omaha and Rockford.

► **WEAVER E. FALBERG** has been elected a member of the board of directors of Joseph T. Ryerson & Son, Inc., warehousing subsidiary of Inland Steel Co. Mr. Falberg joined Ryerson in 1936 and has served in various capacities including manager of the alloy steel division and general manager of sales. He is currently vice president, sales, a position he has held since January of this year.

► **UTILITY APPLIANCE CORP.** plans to increase distribution of Gaffers and Sattler furnaces, residential air conditioning equipment, water heaters and evaporative air coolers in the midwestern and eastern portions of the country. According to Ben B. Breslow, president of the firm, introduction of new models and the recent streamlining of sales personnel in the various areas served will effect better penetration of the eastern market. As part of its modernization program, the company recently installed \$200,000 worth of slitting and shearing equipment that has enabled it to reduce steel waste from 8 to 2 percent, Mr. Breslow said. Revamping of factory facilities has improved handling and storage of components.

► "ORDERS FOR HEAT PUMPS we received during the first quarter of 1960 were approximately double the volume of the first quarter of 1959," according to Henry M. Haase, president of the York Div. of Borg-Warner Corp. "Our own sales records and those for the air conditioning industry in general show that the heat pump is accelerating in popularity more rapidly than any other segment of our business, with the exception of residential air conditioning," Mr. Haase said. To illustrate the expansion of York's heat pump sales, Mr. Haase pointed out that his firm now has seven models of room heat pumps for window and through-the-wall installations, four self-contained models and two remote residential-commercial models.

► **MORE THAN 4500** heating and air conditioning wholesalers and dealer-contractors attended a series of "Control Carnivals" held recently by Minneapolis-Honeywell Regulator Co. in New York State and New England. The carnivals, planned as business-social events in a circus atmosphere, were started last fall in upstate New York to give large groups of dealer-contractors an opportunity of seeing on-the-spot demonstrations of the company's latest control instruments, according to Fred Kaiser, vice president in charge of the eastern region. The circus atmosphere was created through decorations, costumes worn by company personnel, music and raffles.

With more building and remodeling all the time here's the furnace for your customers

THE *Arrow* FOR GAS FUEL

BY **DOWAGIAC** WITH A
.....
LIFETIME WARRANTY *plus*

* greater economy * greater comfort * greater efficiency

CHOICE DEALERSHIPS AVAILABLE
Write . . . wire . . . or call today!

Dowagiac STEEL FURNACE COMPANY
Dowagiac, Mich.

**FOR MAXIMUM HEATING
OR EXHAUSTING EFFICIENCY
AT LOWEST COST**



Patents 2,722,372
and 2,855,874 and
Patents Pending
plus Exclusive
Foreign Patents.

...Specify

Quickdraft

**POWER-DRAFT UNITS
DESIGNED FOR RESIDENTIAL,
COMMERCIAL AND INDUSTRIAL
APPLICATIONS**

★ No motors, fans or bearings in exhaust line
★ Needs no stacks ★ Acid-resisting vitreous
enamel finishes ★ Extremely high static pres-
sures now available

FOR HEATING PLANTS AND INCINERATORS . . . Quickdraft provides constant draft for efficient and economical combustion. It eliminates pulsating or chattering, puffing, smoking and sooting. Costly, tall, unsightly stacks are unnecessary.

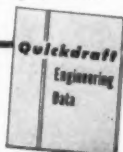
FOR INDUSTRY . . . Quickdraft now offers extremely high static pressures for **EXHAUSTING** corrosive gases, abrasives and paint sprays . . . for **CONVEYING** all types of bulk materials or wastes that can be moved by air.

FOR MOVING AIR in or out of buildings through ducts . . . Quickdraft is outstanding in performance and efficiency.

9010-QD

IMPORTANT NOTICE

To withstand corrosive gases, all Quickdraft units are available in standard acid-resisting vitreous enamel, No. 316 Stainless Steel, rigid plastics (P. V. C.) and with plastic and Fiberglass coatings.



Write today for Quickdraft Engineering Data.

**Quickdraft
CORPORATION**

P. O. BOX 87-D, • CANTON 1, OHIO

wholesaler doings . .

► **SOUTHER STEEL AND ALUMINUM CO.** is the new name of the former E. E. Souther Iron Co., St. Louis wholesaler. Reason for the change, according to Lee J. Haines, is that the board of directors believed the old name did not fully represent the company's operations or the products it has to sell. For example, he said, the firm is moving rapidly into the aluminum building products field, and the new name will help to identify it with that market.

► **REFRIGERATIVE SUPPLY, INC.**, Portland, Ore., will handle distribution of Airtemp packaged heating and cooling products in Oregon, Washington, Idaho, Alaska and a part of Montana. Refrigerative Supply, a 26-year old firm, is headed by W. J. Hieber.

► **APPROXIMATELY 150 CONTROL SERVICEMEN** recently attended a service school sponsored by All Weather Supplies, Youngstown, Ohio, wholesaler. Schools were held on three consecutive Saturdays. Workbooks were prepared by All Weather Supplies in cooperation with Del Lieb, Minneapolis-Honeywell Regulator Co. Subjects covered included common wiring practices, gas and oil control servicing, and air conditioning controls.

► **STEEL CITY WHOLESALERS, INC.**, Birmingham, Ala., is a newly formed wholesaling operation which will serve heating and air conditioning dealer-contractors throughout Alabama and part of Florida. The Steel City firm was recently appointed exclusive distributor in northern Alabama by the York Div., Borg-Warner Corp. President of the new distributorship is J. W. Hamilton Jr. The firm's warehouse is located at 2809 Fifth Ave., S., Birmingham.

► **J. LORBER CO.**, Philadelphia, has been appointed an exclusive wholesaler of "Permaglas" furnaces in Philadelphia county by A. O. Smith Corp. The firm will be a wholesaler on a non-exclusive basis in the Pennsylvania counties of Montgomery, Delaware, Bucks and Chester.

► **NEW SALES MANAGER** for Robertson Heating & Supply Co., Alliance, Ohio wholesaler, is Morgan Spangle. Mr. Spangle was formerly general manager for Ray Fisher Plumbing Supply Co., Chicago.

► **CHICAGO FURNACE SUPPLY CO.** has been appointed a distributor of Rheem heating and air conditioning equipment in the Chicago area. Robert A. Lorenz, president of Chicago Furnace Supply, said that his company is currently conducting a series of installation and service schools for its installing dealer-contractors.

merchandising ideas

► GENERAL ELECTRIC Co.'s Air Conditioning Department recently completed a spring sales promotion campaign directed at the woman of the house. Timed to tie in with the Easter season, the program was built around the offer of a Talmack dress — designed exclusively for General Electric — to purchasers of central air conditioning systems. "The name of Talmack may not be familiar to you," J. J. Heffernan, manager of advertising and sales planning, told dealer-contractors participating in the program, "but you can bank on it that it's mighty well-known to wives of prospective air conditioning purchasers." Promotional material available for the campaign included newspaper ad mats, radio and television spot announcements, and direct mail approaches.

► NEWLY-DESIGNED ROOM AND EQUIPMENT display signs are features of a model home package now available to dealer-contractors handling Janitrol heating and air conditioning products. Produced as a sales aid for builders of new homes, the cards may be placed in advantageous spots throughout the house.

Four room cards feature benefits of "conditioned living" in the kitchen, dining room, living room and bedroom. Typical copy reads, "you'll dine with appetite and delight in 'conditioned living.'"

Two equipment cards cover heating and year 'round air conditioning. Another is designed for placement near the thermostat to bring the system "out of the basement," and a fourth card, for placement at the entrance of the house, greets the prospective customer with a "welcome" message.

► "HOW TO HAVE A SMILING HOME," consumer booklet prepared by the National Fueloil Council, Inc., tells the homeowner things he should know about home heating and emphasizes the advantages of oil heat. "When you buy, build or remodel," the booklet says, "have your heating expert check: 1) the burner head, to see if it is adjusted for best air-oil mixture or if it needs cleaning or replacement; 2) electric controls, which may need adjustment, cleaning or replacement; 3) motor, pump and blower; and 4) chimney, fire box, piping and airtight joints.

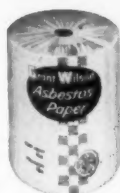
"Other things you can do yourself to save money on your heating plant and keep it continually operating at highest efficiency are: 1) scraping soot off the inner surfaces of the fire chamber with a wire brush; 2) changing the air filters; and 3) oiling motors, blowers and mechanical moving parts outside the burner chamber."

By putting their heating plants in tip-top shape and keeping them that way, the council says, homeowners can be assured of maximum comfort, can save hundreds of dollars in fuel bills.

CONTRACTORS! Here's the line designed for YOU

Grant Wilson

the complete line...completely dependable!
All the thicknesses and weights you'll ever need



ASBESTOS PAPER:

A full range of thicknesses and weights, from 8 to 64 pounds per 100 square feet 18", 24" and 36" wide. 5 lb., 10 lb., 25 lb., 50 lb. and 100 lb. rolls.

ASBESTOS TAPE:

2 and 3 inch widths, 500 to 1500 foot packages, packed in cartons—easy to stock and use, no waste.



MILLBOARD:

Tough but not brittle—thicknesses from 1/8" to 1/2"—carton packed for protection until used.

AIR-CELL CORRUGATED:

3/8", 1/2", 3/4" and 1" thick with or without foil backing—37" wide rolls, packed in cartons.

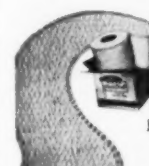


DUX-SULATION:

The world's best duct insulation—1/2" and 1" thick. Costs a little more, worth a lot more.

VIBRA-STOP:

The Metal/Fabric flexible duct connection that stops noise. Two weights of metal, both canvas and asbestos types.

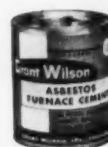


FLEXI-DUCT:

4", 6" and 8" widths of selvage edged flexible asbestos woven duct connectors. Low cost, meets Underwriters' requirements.

FURNACE CEMENT:

Smokeless, odorless, acid proof and fireproof, from 1 pound cans to 100 pound steel drums—a perfect, permanent metal-to-metal seal.



COMBUSTION CHAMBERS:

3/4 to 12 gallons per hour—quick installation, maximum combustion efficiency and long life.

THIS "BUYING & SELLING GUIDE" TELLS YOU EVERYTHING YOU NEED TO KNOW ABOUT ASBESTOS OR INSULATING MATERIALS. GET A COPY FROM YOUR WHOLESALER—IT'S FREE!



Grant Wilson inc.

ASBESTOS and INSULATING MATERIALS

141 W. JACKSON BLVD. Dept. AA CHICAGO 4, ILLINOIS

Don't Neglect this MONEY-MAKER!

Attractive brick-like chimney tops in several sizes. Red, tan or off-white.

No masonry or mortar needed—all-metal construction.

Equipped with handy cleanout and anti-condensation feature.

Build in quickly and easily—one man can erect several in a day.

UL-tested and labeled—can be butted directly against all wood surfaces.

Corrosion-resistant alloys and stainless steel—the flue is nearly friction-free for maximum draft.

The perfect cost-cutting Class A chimney for furnaces, incinerators and other appliances in new and old homes in all price brackets. Special Class B gas vent for gas furnaces and other gas appliances.

Majestic®

Prefabricated, All-Metal

CHIMNEYS



WOOD-BURNING FIREPLACES, TOO!

- Completely prefabricated for all homes up to 2 full stories.
- Complete with chimney package as above.
- 30" and 36" opening widths.
- Any style mantel.
- Raised or floor-level hearth.
- Built-in sliding black mesh firescreen.

WRITE FOR COMPLETE BROCHURES

The **Majestic** Co., Inc.
394 Erie St., Huntington, Indiana

appointments . . .

► **SIDNEY S. EMISON** as a vice president of Continental Air Filters, Inc. Mr. Emison has been with the firm since 1948. He is a charter member of the Louisville chapter of the American Society of Heating, Refrigerating and Air-Conditioning Engineers.

► **JOHN W. EASON**, manager of the Baltimore division of Revere Copper and Brass Inc., as a vice president of Revere. He will serve as executive head of the Baltimore division. Mr. Eason joined the division in 1944 as a technical advisor on aluminum products.



John W. Eason



Dick Riordan

► **DICK RIORDAN** as chief engineer, summer air conditioning, for the Warm Air & Cooling Div., Burnham Corp. Mr. Riordan was formerly with the Mathes Co. and before that was associated with Addison Products Co.

► **R. F. KELLY** as manager of distribution for the York Div., Borg-Warner Corp. He succeeds W. E. Landmesser, who was recently appointed general sales manager for packaged products. Replacing Mr. Kelly as northeast regional sales manager is P. F. Whittemore, formerly of the northeast district office. J. R. Pollock has been appointed regional sales manager for the central region. Mr. Pollock was formerly district sales manager in the southeast region, in which capacity he is being succeeded by Paul W. Brown. A new district sales office for residential and

**Warm air contractor
gets cooling job in
wet heat building...**

AND SAVES 20%!
SEE PAGE 81

THINK ABOUT THIS A MINUTE:

In the New York market

**where price is an
important factor**

**and rigid building
codes exist . . .**



**EMPIRE VENTILATORS
OUTSELL ALL OTHERS**

Sold thru leading wholesalers.
See your jobber.

EMPIRE

VENTILATION EQUIPMENT COMPANY

35-39 Vernon Boulevard
Long Island City 6, N.Y.



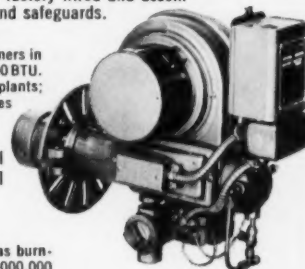
One single source of burners for most every application—that's what Power Flame offers you! In the fact-packed Power Flame Catalogue, you'll discover a complete range of models and sizes in atmospheric burners, power burners and combination burners. All designed for lowest installation and maintenance costs...all "torture tested" for highest efficiency and dependability. Hot idea: Next time, consult Power Flame first!

Power Flame GAS BURNERS

A model to fit every residential, commercial and industrial application. Completely factory wired and assembled, with modern controls and safeguards.

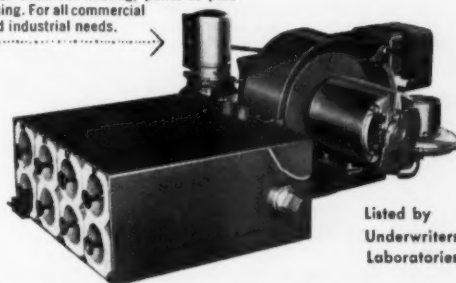
FG Series—Gun type gas burners in series to deliver 85,000 to 4,000,000 BTU. Adaptable to all types of heating plants; ideal for homes, schools, churches and commercial buildings

Flange or pedestal
mount optional



A. G. A. Listed

BFG Series—Spread type gas burners; models from 450,000 to 20,000,000 BTU. Ideal for heating, power or processing. For all commercial and industrial needs.



Listed by
Underwriters'
Laboratories, Inc.

Write today for complete literature, information, and specifications on POWER-FLAME gas burners. Also get all the facts about THORO-MIX gas burners, and COMBI-MATIC dual fuel burners.

Power Flame

Division, Inc. / 1203 MAIN ST.
GRANDVIEW, MO.

The right SNIPS for the job!



K-6 CRIMPER

Double action tool — can crimp as deep as you like. With grips—\$3.42

Klenk's double action tools give you 20% more power with less effort. This is made possible by more opening in the jaws and less opening in the handles. All Klenk tools are easy to assemble and any part can be replaced in a few minutes.

KARL KLENK, INC.
 107-09 East Fifth Street
 Wilmington, Delaware



MODEL AV-7—AIR VANE HIGH EFFICIENCY TYPE
 For cooling and heating, four-way deflection with multi-shutters



ARRO-FLO DIFFUSOR AF-20" and AF-30"
 HIGH EFFICIENCY BASE-BOARD TYPE OUT-OF-WALL REGISTER FOR BOTH HEATING AND COOLING PURPOSES. Our distinctive Arro-Line styling blends with any surroundings, measuring only 3 7/8" in height, allowing for ideal installation under windows.

Write for Catalog

National GRILLE AND REGISTER CO.
 10740 Broadway Ave., Cleveland 25, Ohio

appointments

(Continued)

commercial products has been established at Atlanta which will be under the direction of John C. Rose, formerly a merchandise manager at York, Pa.

► **RICHARD VON MUNKWITZ** as national account sales supervisor for Mueller Climatrol Div. of Worthington Corp. Before joining Mueller Climatrol, Mr. von Munkwitz was assistant public relations director of the National Warm Air Heating and Air Conditioning Association.



Richard von Munkwitz



John V. Youngblood

► **JOHN V. YOUNGBLOOD** as vice president, marketing, for the Bastian-Morley Co. and its subsidiary, H. C. Little Burner Co. Mr. Youngblood, formerly general sales manager of H. C. Little Burner Co., will headquarter at Bastian-Morley's La Porte, Ind., main office.



Rocco L. Stefano



Ralph L. Weisbeck

► **ROCCO L. STEFANO** as general manager of Punch Products Corp. Ralph L. Weisbeck has been appointed sales manager.

► **BERT L. LESLIE** as district manager for Armstrong Furnace Co. He will serve West Virginia as well as parts of Ohio, Pennsylvania and Maryland. With the firm since 1949, Mr. Leslie has served in various capacities in the warehousing, purchasing and production functions of the company. Most recently he was a sales coordinator in the sales department.

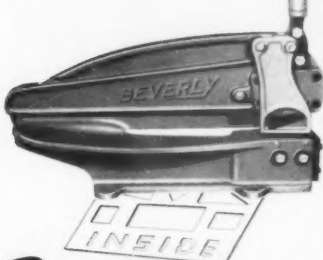
► **HAROLD P. CAINE** as southern regional manager for Eutectic Welding Alloys Corp., with headquarters in Atlanta. Mr. Caine was previously a field supervisor in the northeast territory.

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Make any cut—curved, straight or irregular, faster, easier and better with less material waste on a Beverly Throatless Shear. You can turn work to any position and make a clean cut as you go. Handles heavy gauges with ease—lighter metals without distortion. 4 models—capacities 18 gauge to $\frac{3}{16}$ " mild.



B-3 with
Ball Bearing
Hold Down



INSIDE SLOTTER 8" Reach—16 ga. capacity

Makes inside slotting cutting faster, easier, cleaner. Punch and die arrangement of 5 blades assures accuracy, clean cutting action. Cuts $2\frac{1}{2}$ " x $\frac{1}{4}$ " or $2\frac{1}{2}$ " x $\frac{1}{16}$ " slot at one stroke. Throat design permits pivoting work at any point in stroke for special inside cuts. Note sample cuts at left.

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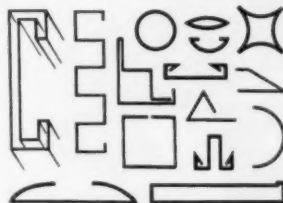
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in Hand, Air and Hydraulic
models in capacities from
2 ft. x 16 ga. to 16 ft. by $\frac{3}{4}$ in.



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STANDARD
DESIGN
No. 27

**Now, it actually costs you less to get a better
engineered E-Z-ON damper regulator.**

Here's Proof: • Lower Price... Means Lower Cost to You
• Double Prongs Mean Double-Grip... No chance of swiveling
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all leading jobbers stock E-Z-ON

Stocked in Canada by THERMIDAIRE CORP. 79 Cumberland St. Toronto

**LIGHTWEIGHT AND
INEXPENSIVE
BENCH SHEAR**

CAPACITY

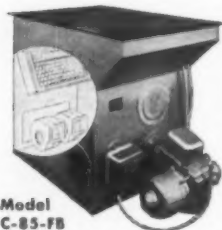
MILD STEEL
FLATS—10 GA.
ROUNDS— $\frac{7}{16}$ "
BARS— $\frac{3}{16}$ " x 2"
ANGLE IRON— $\frac{1}{8}$ "



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No. 39
BENCH SHEAR**

**WEIGHT
WITH 30" HANDLE
18 LBS.**

**WHITNEY METAL TOOL CO.
702 Forbes St., Rockford, Ill. Since 1910**



Model
C-85-FB
OIL-FIRED
85,000 Btu
Output



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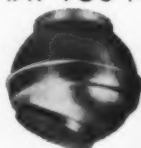
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GATES 3"
and up
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to 8"
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PIPING ▶
10' LENGTHS, 7"
& LARGER, 16 ga
and LIGHTER

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3218 W. Fond du Lac Ave. Milwaukee 10, Wis.

appointments

(Continued)

► RICHARD T. DEMAREST as an associate in the L. J. Krause Co., manufacturers' representative serving the upper Midwest. Mr. Demarest was formerly sales manager for Roberts Supply Co., heating and air conditioning wholesaler of Omaha, Nebr.



Richard T. Demarest



Frank Marshall

► FRANK MARSHALL as district manager in the Rocky Mountain area for Lima Register Co. Mr. Marshall replaces Claude Wilson. He was formerly a district manager for Technical Tape Corp. and before that was with General Electric Co. in Pittsfield, Mass.

► JOHN M. JURIST as district manager in the west coast area for the "Pop" Rivet Div., United Shoe Machinery Corp. Mr. Jurist has been a sales engineer with the company since 1954.



John M. Jurist



J. H. Jordan

► J. H. JORDAN, formerly assistant to the president of Iron Fireman Mfg. Co., as vice president and manager of the company's heating and cooling division. He will have headquarters in Cleveland.

► RALPH ACHELPOHL as sales planning manager for commercial products, packaged heating and cooling department of Chrysler Corp.'s Airtemp Div. Mr. Achelpohl has been with the division for 15 years, serving as field engineer, district manager and sales engineer.

► JOHN L. DANIELL, former senior vice president of Pullman Vacuum Cleaner Corp., as a manufacturer's representative handling Pullman products. He will serve a territory consisting of North and South Carolina, Georgia and Florida.

ZATKO

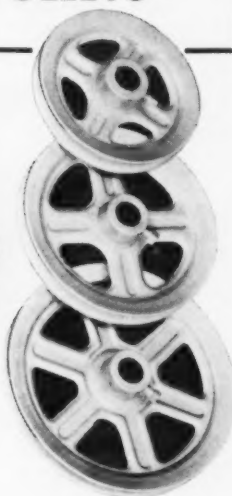
ONE PIECE PULLEYS

**THEY COST
YOU LESS!**

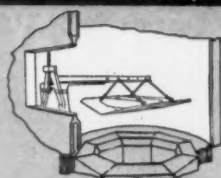
Zatko Pulleys cost less in the long run due to superior construction and performance. One-piece fabrication assures trouble-free operation, and long, dependable running has made these pulleys standard with many manufacturers of heating and air conditioning equipment.

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"HANG-DOWN"
BAFFLE



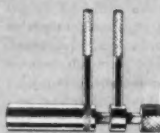
BOSTON-
APTHORP
OIL BURNER
NOZZLE



Instant-Glo
COMBUSTION CHAMBER



The New Boston
DRAFT STABILIZER



Ideal
NOZZLE EXTRACTOR



Clearview
OIL TANK GAUGE



BOSMACO
Apthorp NOZZLE KIT

BOSTON MACHINE WORKS COMPANY
Oil Heating Supplies Division, Manufacturers, Lynn, Mass.

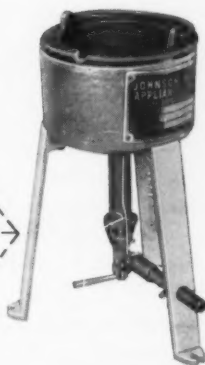
FASTER HEAT

johnson

MELTING POT FURNACES

NO. 15

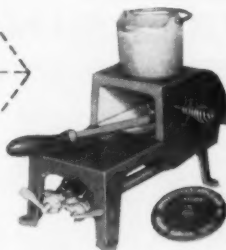
Melts 18-lb. lead capacity in under 10 min. Built to stand up under hard use. Has powerful No. 5, Type A Johnson Patented Direct Jet Bunsen Burner with shut-off valve and pilot light. Height, 13". 13,000 BTU's per hr.



NO. 105

Soldering and Melting

No forced air blast required. Cast iron pot capacity, 10 lbs. Two-burner unit doubles for heating soldering coppers up to 12 lbs. per pair. Firebox 3 3/4" by 4 1/2" by 5 1/2". 26,000 BTU's per hr. Length, 14".



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APPLIANCE COMPANY**
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Cedar Rapids, Iowa

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If it burns gas
look to Johnson—Since 1901

FLANGES THE DUCT with Amazing Speed!

Less than 5 seconds on short
and lighter pieces . . .
Slightly longer on bulkier pieces

MAKES PERFECT DRIVE-CLEATS TOO!

The ONLY tool that does both.
A complete drive cleating tool . . .
no set-up time . . . no adjustments.
Handy to take out to the job when
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Quickly pays for itself in time,
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12" Wide —
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18" Wide —
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24" Wide —
- No. 30 Smith's Cleat Bender
30" Wide —

Also Universal Cleat Bending
Brakes and Box and
Pan Brakes

Write for nearest distributor



**PERFECT
DRIVE CLEATS**
fit the duct without
the use of a screwdriver.
TREMENDOUS SAVINGS
in erection time and labor.

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insulation, helps
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without gauges

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with gauges



Forged steel Handy Seamer
with or without depth gauge

Complete line of machines and tools for sheet metal fabrication.

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appointments

(Continued)

► ELLIOTT C. MALLY as a regional sales representative for Maxitrol Co. He will work out of Cleveland, covering parts of Ohio, West Virginia, Pennsylvania and New York.



Elliott C. Mally



Frank Stoffel

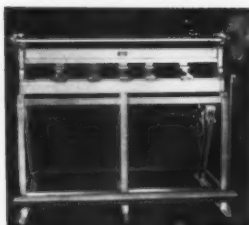
► FRANK STOFFEL as Columbus sales representative for Ilg Electric Ventilating Co. Mr. Stoffel's headquarters are at 3851 N. High St., Columbus 11.

Obituary

J. W. Calhoun

J. W. CALHOON, 64, died April 22, 1960 in Rock Island, Ill., of a heart attack. Mr. Calhoun, active in the heating industry for most of his adult life, became a manufacturers' representative covering Iowa and parts of Illinois, Nebraska, Minnesota and Missouri in 1951. Before that he had been affiliated with Meyer Furnace Co. in various capacities, and earlier had been associated with Standard Furnace & Supply Co. of Omaha, serving first as a salesman and later as sales manager. At the time of his death he represented International Heater Co., Bacharach Industrial Instrument Co. and Rock Island Register Co.

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Dealers inquiries
welcomed

Multi-Notcher

... will make six notches at one time. Ideal for duct and punching work. Dies are adjustable along the entire length of the machine. Power driven or hand operated models available in 36", 48", 60" sizes.

Multi-Notchers 'Husky' Presses 'Over the Lock' Pipe Rollers — 'Autoset' Beaders & Crimpers Omni-Shears & Hand Tools

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FALLSINGTON • PENNSYLVANIA

Smith's 180° plus

UNIVERSAL BOX AND PAN BRAKE

Bends Sheet Metal ALL THE WAY OVER AGAINST ITSELF Without Re-positioning the Workpiece



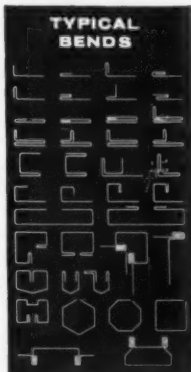
Smith's Sheet Metal Bending Brake is a ruggedly built production tool, capable of making almost any desired bend quickly, easily, and accurately. When required, hold-down mandrel segments may be removed to permit bending box sections, etc. Bends made on a Smith's Brake are always straight because bending force is applied up through the edge of the mandrel blade—not against its side. Thin section of mandrel segments permits getting into corners, slots, or crevices too tight for any other equipment.

Made in 3 Models: Capacities of 14, 16 and 20 ga. and bending widths up to 48".

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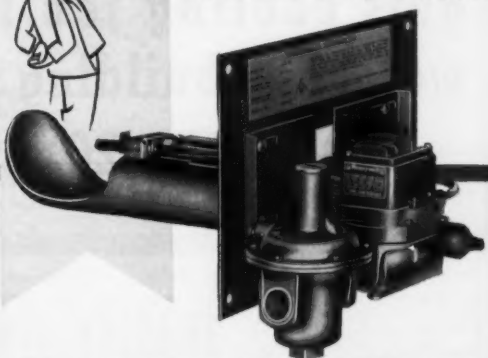


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MAKE SURE YOU HAVE A BANNER YEAR IN VOLUME AND PROFITS



SELL AND INSTALL THE UNSURPASSED OG-56 OIL-TO-GAS CONVERSION UNIT by BANNER BURNER

- Flawless Design and Construction.
- No-Burn-Out, One-Piece Cast Iron Venturi and Flame Spreader.
- Fast, Easy Installation... Fits through Four-Inch Oil Burner Sleeve.
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- 60,000 to 150,000 BTU Input.

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SWIVEL HEAD SQUEEZER TONGS

For closing Government box lock connection on duct work and all standing seams. Swivel head makes tongs usable on all four sides, in either vertical or horizontal position.

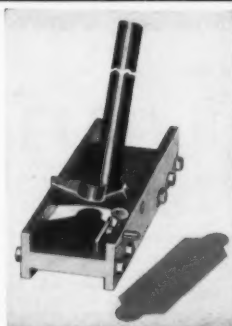
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Handles up to 3" wide, 22 ga. or lighter. Hand or foot operation. Mounts on bench, or on job with clamps, or bolts and screws.



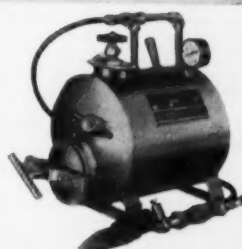
CLIP PUNCH

For fastening slips or seams on ducts. Will push a "half moon" thru 3 thicknesses of 18-ga. steel. No hammering or flattening out to fasten slip to the duct.



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Will give you hot soldering iron in one minute—Solders eight hours for 10c—Right amount of heat—No changing of irons—Make your own fuel from water and carbide.



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Zinc Ornaments Available From Stock. Copper, brass, bronze, aluminum and stainless steel ornaments made up promptly.

If you don't have catalog K, send for it NOW

MILLER & DOING

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Warm air contractor gets cooling job in wet heat building...

AND SAVES 20%!

SEE PAGE 81

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gets cooling job in
wet heat building...
AND SAVES 20%!
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of Humidifiers and Filters
means **MORE SALES**
MORE PROFITS for you!

Skuttle MANUFACTURING CO. • MILFORD, MICHIGAN



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FOR STRONGER JOINTS**
For Soldering — Brazing — Welding



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**"THE DRILL BIT
that will not
SLIP or SLIDE on
SHEET Metal"
'snap resistant'**

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Write for descriptive literature, prices and discounts. Effective control of humidity is positively assured by installing Monmouth Humidifiers. Simple installation and greater customer satisfaction mean larger profits.

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Operates in 1" of water.

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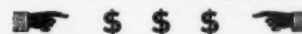
FOR SALE: Ingels Elbow Machine. Model C. Individual Drive (Louis Allis motor). 1 h.p. 1725 r.p.m. 220/440 V. — 3 phase. Complete for fabricating 45° and 90° elbows. Inquire: Mr. L. Krajewski, Mueller Climatrol, Box 401, Milwaukee 1, Wis.

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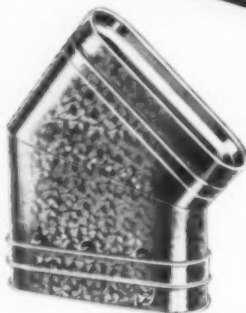
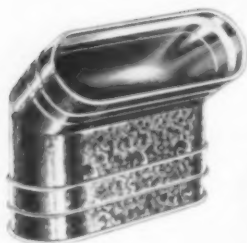
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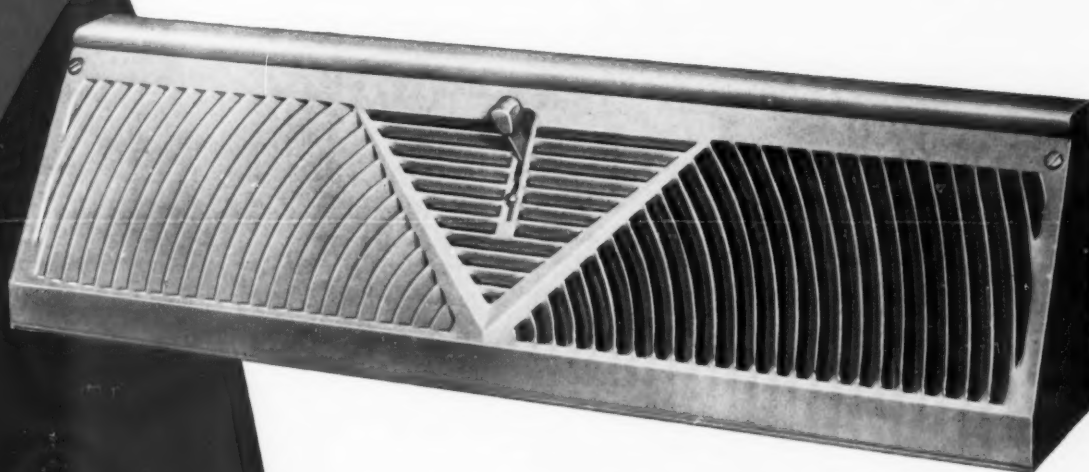
**HART & COOLEY
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